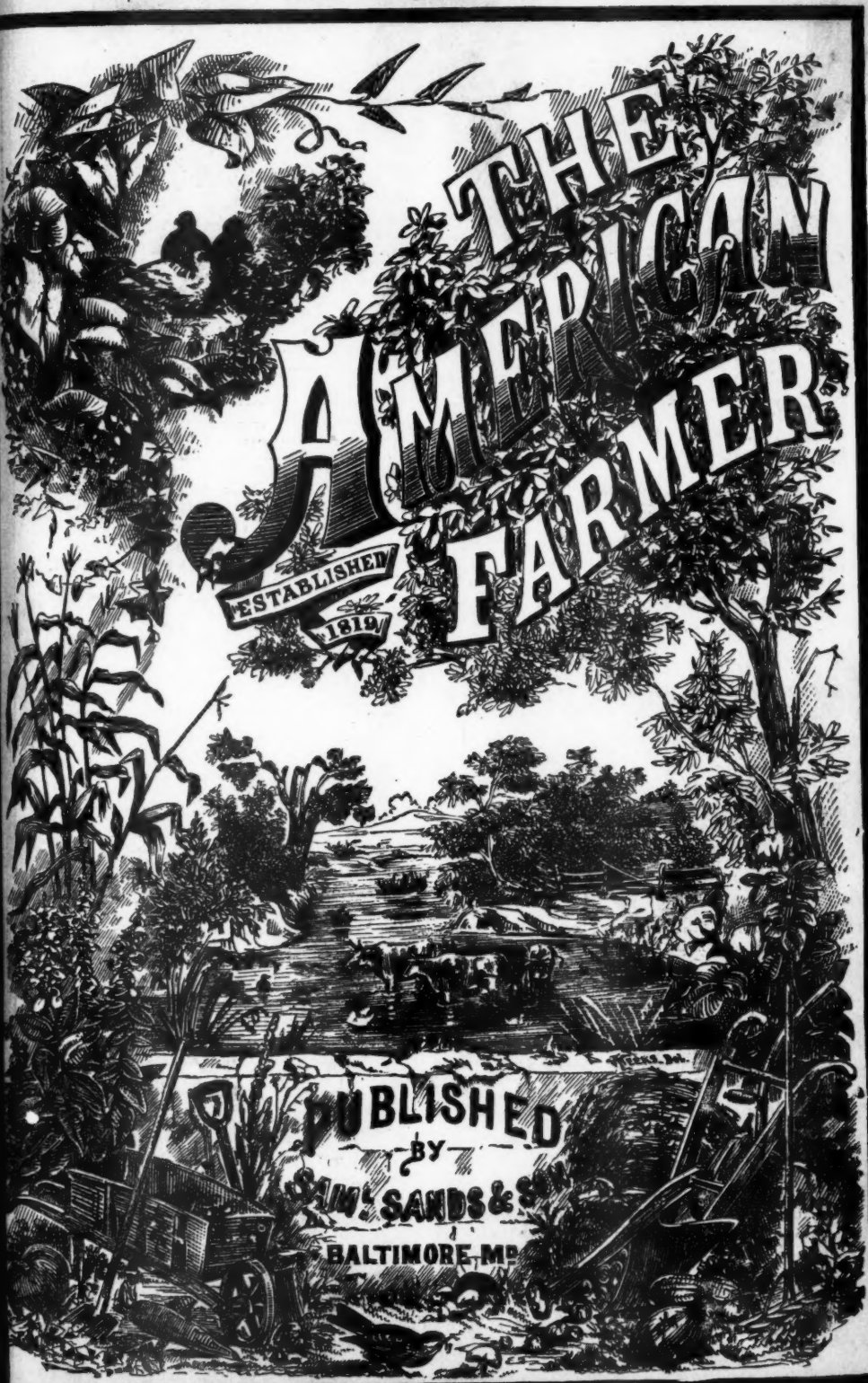
MAY, 1876.


THE
AMERICAN
FARMER
ESTABLISHED
1819
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BALTIMORE MD

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Moisture, (deter. at 212° F.)	3.74 per cent.
Organic Matter	40.12 per cent.
Containing—Nitrogen, 4.08; Ammonia 4.95	
Inorganic Matter	56.14 per cent.
Containing Phosphoric Acid	24.52 per cent.
Containing Bone Phosphate of Lime	53.52 per cent.
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Respectfully, etc., P. B. WILSON, *Analytical and Consulting Chemist.*

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FRUIT AND ORNAMENTAL TREES, SHRUBS AND PLANTS; FIELD, GARDEN AND FLOWER SEEDS.

ALL KINDS OF FARM SUPPLIES.

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IMPROVED LIVE STOCK,

CATTLE, HORSES, SHEEP, SWINE and POULTRY. In this Department we buy only from breeders of established reputation of the several kinds, and cannot undertake to procure ordinary farm stock, such as draft horses, milch cows, &c. In this vicinity great attention is paid to some particular breeds of stock, and specimens can be had here which are nowhere to be surpassed.

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EDITORS AND PUBLISHERS AMERICAN FARMER,

No. 9 North St., Baltimore, Md.

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THE

AMERICAN FARMER.

"O FORTUNATOS NIMIUM SUA SI BONA NORINT
"AGRICOLAS." . . . . . *Virg.*

PUBLISHED BY SAML. SANDS & SON, BALTIMORE, MD.

VOL. V.—No. 5.] MAY, 1876. [NEW SERIES.

Chemical Manures and the Wheat Crop.

[Continued from *American Farmer* for April.]

In my last No. I endeavored to show the great value and importance of nitrogen as a constituent of all fertilizers intended for the wheat crop; and if the highest authorities in both practice and science are capable of establishing any fact, then I claim that the indispensible necessity of large supplies of nitrogen to grow wheat successfully was clearly proven beyond a doubt. I also showed with equal certainty that the great mass of fertilizers now sold for that purpose are utterly inadequate to meet the demands of the wheat crop for nitrogen. And just here the great practical question arises, can a fertilizer carrying the requisite amount of nitrogen be had and at such a price as will make it pay upon the wheat crop? The solution of this question depends upon two considerations: The first is favorable seasons; and the other is a fair price for wheat. With both of these conditions favorable, I think that it may be done. But in order to do it *then*, a high-grade article, (one carrying not less than 5 per cent. of ammonia) must be used with applications of from 400 to 500 pounds per acre. And these pre-requisites must be accompanied by early seeding and a thorough preparation of the soil. In my humble opinion this is the only way to make these fertilizers pay upon the wheat crop, and only then when all of the surroundings are favorable. In order to sustain this position, I will introduce some facts and figures drawn from the highest authorities in experimental science.

First, I will introduce some comparative estimates showing the difference between a low-grade and a high-grade fertilizer. A low-grade fertilizer will cost say $45 per ton; the high-grade $60, the difference in the cost being $15. Both of them will contain sufficient supplies of the mineral elements needed, the only difference being in the amount of nitrogen furnished by each. The one having say 2½ per cent. of ammonia, and the other 5. At this rate the first will contain 50 pounds of nitrogen per ton, and the other 100 pounds—just double—really worth double or nearly so, as the product will be about double. It is evident that if the low-grade article is worth $45, the high grade one is worth $90, whilst the difference in the cost is only $15. And hence, too, the inevitable conclusion that the high-grade article is by far the cheapest, and is the only one that will pay if any will.

Assuming as data that 1½ pounds of ammonia, together with what a moderate soil will yield, will produce a bushel of wheat, the following results will appear:

500 lbs. of fertilizer at $45 ₹ ton	$11.25	
Cost of cultivation, &c., say	10.00	
		$21.25
The product will be 9 bushels at $1.50	13.50	
Straw and chaff worth say	2.50	
		16.00
Showing a loss of		$5.25

Now take a fertilizer bearing 5 per cent. of ammonia.

500 lbs. at $60 ₹ ton	$15.00	
Cost of cultivation, &c., say	10.00	
		$25.00
The product will be 20 bushels at $1.50	30.00	
Straw and Chaff worth say	5.00	
		35.00
Showing a profit of		$10.00

And making a difference of $15.25 in favor of the high-grade fertilizer.

Now take a small application and a heavy one, say 200 pounds, and 500 pounds of a fertilizer containing 5 per cent. of ammonia, at $60 per ton.

500 lbs. as above shown would give a profit of		$10.00
200 lbs. of the same	$6.00	
Cost of cultivation, &c., say	8.00	
		$14.00
The product will be 7½ bus. at $1.50	11.25	
Straw and chaff	2.50	
	13.75	
		.25
Showing a difference in favor of heavy application		$10.25

It will be observed that I put the yield of the heavy application at a higher rate in proportion to the percentage of ammonia furnished, than the other, because the percentage of yield in a heavy application is higher than it is in a small one, and which I will now proceed to show.

It has been established by the most careful and accurate experiments, that the percentage of increased crop is much higher in a heavy ap-

plication than a light one. Hilldrigel, an eminent German chemist, instituted some experiments proving this very clearly. He made eight different applications of nitrogen, running from 7 pounds up to 84.

The first application of 7 pounds produced an increased yield of .553. In the second he used 14 pounds and the product was 1.776. Showing that whilst the quantity of nitrogen applied was only double, the product was more than three times the first. His table shows that the product goes on to increase in the same ratio, until it reaches 56 pounds. At this point the product reaches 7.198, being nearly 14 times greater than the first application of 7 pounds, whilst the quantity of nitrogen employed was only 8 times greater.

Hilldrigel also found that the maximum yield could be reached by 70 pounds of nitrogen for wheat; 63 for rye, and 36 for oats.

These are most important and significant facts, going to prove that heavy applications of fertilizers pay best, and that heavy manuring for everything pays best.

If we wish to reap any benefit from the use of fertilizers on the wheat crop, we must get a high-grade article, and make much heavier applications than we have been in the habit of using. A No. 1 Chincha Island Peruvian, the most concentrated of all manures, and the best ever used for wheat, used to carry (it is all gone now) from 15 to 17 per cent. of ammonia. The fertilizers now manufactured here do not carry on an average more than 2½ per cent. Just mark the difference. But the manufacturers of fertilizers (who live and move round in the cities, and who perhaps never saw a field of wheat,) say that Peruvian guano contains an excess of ammonia. But how can this be when the highest authorities say that it takes 65 pounds of ammonia to make 33 bushels of wheat, whilst 200 pounds of Peruvian guano, the usual application, will only furnish 30 pounds, and whilst it requires 70 pounds of nitrogen to produce a maximum yield.

In the absence of nearly all governmental protection against frauds and adulterations in the manufacture and sale of these fertilizers, and in the absence also of nearly all knowledge of chemistry on the part of the great mass of our farmers, the best and safest plan for them to pursue would be to procure their fertilizers only of houses of established reputation and character, and such as will furnish an honest analysis of their fertilizers. A little knowledge of chemistry would enable them to form a tolerably correct opinion of the value of such fertilizers, and whether they be adapted to the particular crop to be cultivated, as well as to the peculiarities of the soil.

As before observed nitrogen is difficult to be obtained, and the artificial supplies are very costly. Manufacturers therefore touch it very sparingly, and the percentage in some of their fertilizers is very low. Nitrogen costs something like 30 cents per pound. A fertilizer carrying 5 per cent. of nitrogen would contain $30 worth of it. Add to this about $15 more, the cost of the other ingredients, and you have the prime cost of the raw material for a ton of fertilizer at $45. Add to this the cost of manufacturing and other necessary expenses, with a reasonable profit, and it will be seen that a good fertilizer containing enough nitrogen for wheat, cannot be made for much less than $60 per ton; and in order to supply 25 per cent. of ammonia, the amount necessary to produce 20 bushels of wheat, you will have to apply 500 pounds of that.

To be just to the manufacturers, I must say that they are not so much to blame for putting up their low-grade fertilizers. The universal clamor amongst farmers is for something cheap. They are unwilling to pay the price of a good article, and manufacturers, if they were disposed to do it, cannot afford to furnish a high-grade fertilizer at a low price. If farmers would take the pains to learn something about chemistry, so as to understand the value and necessity of the main ingredients of a good fertilizer, the trade in them would be much more satisfactory and remunerative.

The value and importance of nitrogen in some of its compounds, as an ingredient in most of our staple crops, cannot be over-estimated. It is the main vital quickening element of vegetable life, and the leading agricultural plants at least cannot be successfully grown without ample supplies of it. But the artificial supplies of it are so costly that it is extremely doubtful whether it can be made to pay on the wheat crop. What then is the alternative if this important question is determined in the negative? Why! it is simply this: we must draw our supplies from that inexhaustible storehouse, the atmosphere. And this is not so difficult to do if we adopt the proper means, and persist in their use. We must grow the legumes, peas and clover. Peas and clover are our main reliance here, and every farmer should at once adopt such measures as will ensure good stands of clover.

Fortunately for Virginia and fortunately for her impoverished people, she possesses the clover-bearing capacities in an eminent degree. This fact adds millions to the value of her lands, and renders their recuperation an easy matter if the proper efforts are made in that direction.

Our people do not sufficiently realize the immense value and importance of the clover crop. It furnishes in abundance the most costly and valuable elements of plant-food. It also makes a good hay crop, is a permanent improver of the soil, and furnishes the best pasturage for stock. It is the strangest thing in the world that a crop so valuable should be so much neglected. And it is stranger still that farmers should be content to pay 30 cents per pound for artificial nitrogen, when they may draw ample supplies from the atmosphere without money and without price.

The use of the fertilizers upon the wheat crop, it must be admitted, is of doubtful propriety, and dependent upon circumstances as I have shown, but there is no doubt about the propriety of their use upon the tobacco crop. A good fertilizer will pay well upon tobacco, for you have three chances for getting your money back: First in the tobacco, then the wheat, and then the clover, and a heavy application in the start will ordinarily give you a good crop of each. The very best system that could be adopted

in this tobacco-growing section, would be to cultivate large crops of tobacco, use the fertilizers freely upon it, and follow it up always with wheat and clover. And in the cultivation of wheat we should depend mainly upon the tobacco tops and a clover fallow. When fertilizers are used at all, it should be a high-grade article, with heavy applications.

In using the fertilizers for the wheat crop, it requires a certain amount to pay for the fertilizer and the cost of production, and in order to reap a profit you must go beyond that, and every additional pound adds to the profit, until you reach the point where the scale turns, and any farther application involves a loss. As before observed, the maximum product in case of the wheat crop will be reached with 70 per cent. nitrogen, or about 1,000 pounds of a high-grade fertilizer.

From the estimates given, it will be seen that on a moderately good soil it will require about 200 pounds of a good fertilizer to pay the cost when wheat is worth $1.50 per bushel, and that it will take an application of 500 pounds to yield a profit of $10 per acre. At the same rate an application of 600 pounds will pay a profit of $15; 800 pounds, $25; and 1,000 pounds, $35. Establishing the fact beyond a doubt, that heavy applications pay best. But all applications, whether small or great, are liable to be affected by the casualties of the seasons, and other disasters incident to wheat-growing.

In all applications there is some risk, and of course the risk is greater in a large application than a small one. But on the contrary if the risk is greater, if the seasons be favorable the profit will be greater in proportion. There are but few things absolutely certain in the future, and in order to accomplish anything in the future we must incur some risk. A man who is afraid to risk anything will never accomplish much. The Bible says that he that sows sparingly shall reap sparingly, and he that sows bountifully shall reap bountifully; and old mother earth scarcely ever fails to make a bountiful response to the demands of her toiling sons, when these demands are accompanied by liberal contributions from the manure banks; and M. Ville says that all successful farming depends upon heavy manuring. WM. HOLMAN.

Cumberland Co., Va., April, 1876.

The Centennial Plow.

Messrs. Editors American Farmer:

He that fells the forest or turns the prairie sod, or drains the swamp, or discovers the ingredients and compounds them to restore exhausted fertility to the soil, deserves the credit of a benefactor of his race, as he makes "two blades of grass grow where one grew before." This being so, should not he that so improves the plow, the implement that of all others is at the foundation of agriculture, *par excellence*, be esteemed a benefactor? Farmers all know that the point or share, whether wrought or cast, is the perishable and most costly part of the plow. In gravelly and stony land this loss is greater, and unless provision is made in time, the distance from shop or foundry often causes much inconvenience and loss of time. I am at this time testing a new plow, that, as appropriate to the time at which it is brought out, I have dubbed the *Centennial*.—'Tis the invention of a practical farmer, who, like my old friend, Neri Blatchley, of Broome county, New York, with his own hands fashioned and then tried, as plowman, the merits of his work. Permit me to say just here that Neri Blatchley, through a mutual friend, having heard of me, made, put on the cars and sent to me, from his far-off home on the Susquehanna, some years before the war, two of the best plows I have ever seen turn the soil—a hillside and common plow. From an entire stranger, that I had only known from reputation—most favorably, it is true—it was a kindness I shall ever appreciate. From his age and the lapse of time, I cannot but fear he has been gathered to his fathers; if so, may the sod press lightly on his bosom, and may the motto on his tomb be "here lies a benefactor of his race."

Joseph Shikel, post-office Bridgewater, Rockingham Co., Va., is the inventor of the improvement referred to. It is of such a character as to be susceptible of adoption by any plowmaker.—It consists of a double wedge, that is inserted in the landside, making a part of it and adding strength to it. When the upper side of the first end is too much leveled off it is turned upside down and then end for end, thus making in fact four distinct points. If made of steel or good chapery iron, the last is almost indefinite. A single screw holds it in place. A number of farmers have used it or seen it in use, and there is but one opinion, as to its economy, simplicity, and an improvement of great merit. Besides being a farmer, Mr. Shikel has for some years carried on a foundry, and is a respectable machinist. This has enabled him to indulge his taste for invention, at less cost than others could do. He is an inventor in another department, I may at a future time refer to. He followed the Confederate flag, and is now associated with his father in business. I have no interest beyond seeing merit rewarded in a worthy individual.—I do not doubt but the time will come when Joseph Shikel, like Goodyear, Morse, McCormick and others, will in the not far distant future be regarded as one who deserves well of his country, as an inventor. Permit me to suggest through your widely-diffused and most excellent journal that it may be worth the attention of some friend of agriculture who has the time, the qualification and the taste, to get up a history of the plow, and note the improvement and changes made in it in the United States. There are many yet living who remember the wooden mould-board and old-fashioned bar-share Rivercomb plow.

Augusta Co., Va., April 10, 1876. J. M. M'CUE.

SEED POTATOES.—A correspondent says: In planting, select for seed medium-sized potatoes, and those that are smooth and egg-shaped. We often hear it said that small potatoes are as good as large for seed, and we were once so foolish as to think so ourselves. In one year's trial the small potatoes may give a crop, under favorable circumstances, equal or almost equal to that raised from larger seed, but follow up planting small seed for a series of years, and degeneracy will surely be the result.

Illusions with Regard to the Effects of Lime, &c.

Messrs. Editors of the American Farmer:

Lyell, the geologist, assumes that it is possible that the common earth-worm may change the consistence of the soil by excretions deposited on its surface, but the corresponding influence exerted by the application of 30 or 40 bushels of lime, at long intervals, seems illusive, when we are assured that only one per cent. is added when four hundred bushels of quick-lime are applied to an acre of one foot in depth. A similar illusion with regard to a possibility of poisoning the soil with arsenic, has been recently discussed in all the periodicals, and it seems to be satisfactorily demonstrated, that no appreciable influence can be expected when the most potent elements are correspondingly diluted by the soil.

As one of the pioneers in this illusion—before any publication appeared—I wrote an essay for the *Prairie Farmer* as to the importance of some systematic observations in the west, where many tons of arsenic were spread in the form of Paris green (Scheele's green or arsenite of copper,) to arrest the progress of the potato beetle; but the essay was suppressed, and subsequently burned (after keeping it more than a year) in view of the "dilution" above referred to. I was consequently amused with the grave discussion of this matter in a much more absurd form, as the beetle progressed to the east, viz: as to the tuber of the potato; while the points discussed in my essay seem to have entirely escaped notice in any publication that I have seen.

It is universally admitted that the most malarious districts in Europe are rendered habitable by the smelting of arsenic in their vicinity, but the evaporation from "Scheele's green" could hardly be compared therewith, nevertheless its influence is possible. The extensive drainage therefrom and consequent presence of arsenic in decimals will inevitably influence the future *toxicology* of the districts where arsenic has thus been spread upon the surface of the soil or in any other form. There is no illusion as to the poisonous influence of *equally minute* traces of lead derived from more insoluble compounds in cisterns. As much of the water consumed by farmers in our Western States is collected in cisterns, I published an essay on the use of white lead as a roof paint in the *Prairie Farmer* at about the same time, though the *fatal* experience in the family of an M. D.!! in *Maryland*, and the apprehensions of a farmer in Delaware, elicited my opinion. If an intelligent farmer has used white lead in painting the roof which supplies his cistern, and an expert poisons his own children as above indicated, it is probable that MANY farmers have suffered from this most insidious poison, especially as the cause of the mischief was not detected in the latter case until more than one of the family was sacrificed.

The proposition which we wish to establish is, the importance of actual *experience* in *every locality* as to the *average* influence of all foreign elements of plant-food, without any regard to the theories or notions usually entertained as to their influence or the *apparent* experience of neighboring farmers, which should always be suspected as illusive. The fact that a large family or city may use lead pipes, does not prove that the water from *your* roof is safely used through the same pipes, as we have abundantly demonstrated in our reports to the City Council of Baltimore on choosing the present supply of water for that city. Old proverbs may be ridiculed, but they are generally based on a sort of *average* experience which is less illusive than the hasty experiment of our modern school of agriculture, or even the authorities they sometimes quote to sustain their pr cious assumptions. The *average* results as to the application of lime during three years—on *small* plots of the several cultivations—would save enough on this peninsula to pay all the taxes Those who have the ability seldom combine with it the disposition to observe—as Lord Kames did—that lime seems to defer its salutary influence until it becomes "effete," or carbonated, and when thus applied in the form of "shell marl an inch thick, it produces large crops *for a time*, but at last renders the soil *incapable* of bearing either corn or grass—of which there are many examples in Scotland;" "*the same is true of lime in any form.*" These quotations seem to endorse the old proverb that "lime enriches the father, but impoverishes the son,"—precisely on the same principle that Peruvian guano, or any other manure so remarkably well characterized by any *one* of the essentials of a good soil may impoverish. The illusion with regard to lime, however, is more injurious than that of Peruvian guano—as the latter is apt to fail during the first year, from various causes, and its influence is seldom of any importance *thereafter*, whereas lime is seldom so necessary as a manure; yet it may not only "urge forward" an *extravagant* expenditure of the *normal* annual income of the soil, but also anticipate that of *future* years—as in the cases cited by Lord Kames, and backed by his own experience. Chalk is the powder of shells, and shells are *the* purest lime that is accessible to the agriculturist; yet "chalk soils are apparently benefitted by liming." Indeed this illusion may appear to some as satisfactory as the use of lime on soils that are destitute of this necessary element, (if such really exist?) It can be satisfactorily demonstrated that lime is frequently applied to land where all the good results are attributable to some one or two per cent. of "phosphate," or some such element which it contains, and which could be supplied at less cost alone. But more frequently the illusion is the same sort which still enriches Virginia, by stimulating the exportation of ginseng.

The Chinese are the most "practical" of all nations; yet this inert root commanded its weight in silver in China at one time, and our forefathers preferred the red bark of Peru to the Calisaya yellow or quinine bark; and the Loka may still be preferred by some, though *it* does not contain any quinine. So also the illusions with regard to lime may account for its continued application in many localities. We do *not* discourage the use of "bought manures," especially lime, and those which are equally well characterized by some *one* element; but if so, it should be selected and paid for in proportion *to that element;* and we should be absolutely certain that the application of that one element will pay better than any other, before any extensive

application of it is made on any cultivation. Moreover, its *repetition* should be guarded upon the same principle, however successful the first application. Every farmer should rely on *his own* observations as to the requirements of his land in proportion as he is now restricted to the purchase of but two or three *simple* elements of plant-food from which he may select, whereas formerly he was bewildered with *compounds;* and learned empyrics still may vaunt their formulas and hobbies, or receipts for certain *crops.*

DAVID STEWART, M. D.

Port Penn, Delaware, March 15th, 1876.

Draining Land.

Messrs. Editors American Farmer:

In an article headed as above, written by Mr. Thos. Croft, and appearing in the April number of the *Farmer,* I find a passage alluding to my remarks made on subsoil drainage in the February number. If Mr. Croft will have the kindness to carefully read my remarks on the subject, he will find that I *nowhere* have stated that the water enters the drains through the top, although it *most certainly* does so when sufficient space is found for it to penetrate.

I repeat, that the gravity of the water itself will force it down hill, be it in a depth of an inch or four feet, and whenever on its downward course it meets the subsoil drains it will enter them from the bottom, sides and top, and be carried off by them. If drains are laid up and down the natural slope, especially if the fall of the slope is great, the water in the soil between two drains will not deviate from its straight downward course to seek the subsoil drains,—distant from five to fifteen yards. Consequently it does not reach the drains, and the soil between the drains will only partially be benefitted by them.

In boring a hole in the bottom of a barrel, filled with soil saturated with water, and another hole *halfways* down on the side, it will be found that more than *three-fourths* of the water will be discharged through the bottom hole: a sufficient proof that water will not deviate from a straight course downwards, except where it meets an outlet on its passage.

If Mr. Croft had had an opportunity to read what I have written on the subject of drainage for the last fifteen years, he would have found that I am decidedly in favor of *deep* drainage and have advocated it on all occasions. In fact, no man experienced in sub-soil drainage will dispute the advantages of *deep* drainage; they are so obvious that they *cannot* be contradicted.

Bay St. Louis, Miss. L. A. HANSEN.

Farmers' Tenants, &c.

Messrs. Editors American Farmer:

I have thought it might interest some of your readers to drop a few hints on the landlord and tenant system; or, in other words, renting. There are many whose means consist principally in land, who farm it in whole or in part; and others do not cultivate their lands. Where farms are leased for cultivation, the advantages should be mutual between landlord and tenant; as a general thing the investment of the former is the greatest, the tenant's consisting mainly in implements, horses and cattle. It is pleasing and important to the land-owner to see his land well cultivated, kept clean, well fenced in, and at the same time improved. His tenant is one he knows, or comes to him well recommended, and while things go on satisfactorily, that relationship to each other is likely to remain so. But if the one is too exacting and the other too remiss, the compact is likely soon to terminate. One thing is very important, honesty; if the tenant undertakes to give a certain portion as rent and fails to do so, and if he does not keep up the fencing, and lets the farm go down, he cannot expect to continue on it. I have seldom known a real good tenant out of a place long; he is respected and sought after; a good tenant, like a punctual borrower, can get good farms on good terms, whilst bad tenants and non-punctual borrowers are at a considerable discount. Lands rent in various ways, either for money or portions of the crops. In some places the half of the crop is required, the landlord furnishing half of the seeds and fertilizers. Two-fifths also are given, and the tenant furnishes the seed and three-fifths of fertilizers. In both cases the ground is to be sowed down in the grasses. There are two things certain: if a tenant wishes to keep a farm, he must be honest, industrious, and an improver. On the other hand a landlord should know when he had the right tenant and to make it to his interest to stay. Tenants should be aware that they can get a greater use of land than money on loan. The land is a security itself, whereas a note for money must be well-endorsed and met with interest when due.

C.

Jefferson Co., W. Va.

How to Make Farming Pay.

Messrs. Editors American Farmer:

This proposition can only be discussed relatively, except in the more comprehensive view, that to make it "pay" you must apply fertilizers liberally and judiciously.

But what will "pay" in one locality will not pay in another. For example: to a farmer in the far West, where potatoes are 10 cents and corn 12½ cents ber bushel (shelled,) it will pay to raise and fatten stock. To a farmer living retired from markets and railroads, it will pay to raise the grains or keep a butter or cheese dairy. But to one who has a ready access to markets (and of course whose lands are more valuable,) the above products will not pay, albeit his soil is fertile and he may be able to "make" good crops.

For *he can do better.* He is not only "not making much," but is actually losing money.—Who in these circumstances raises the ordinary field crops, and who can purchase corn in the ear for 25 cents per bushel, etc., etc., when for each acre of strawberries, raspberries, grapes, apples, cherries, pears, peaches, plums, quinces, etc., he can receive an increase of $500.

Of course he must plant the best, cultivate thoroughly and market profitably. Nor is there any danger of an overstock, when the markets of Europe are paying us well for our fruits.

But let figures speak: The expense of getting in a crop of corn of seven acres, cultivating, harvesting, interest, etc., will not be far from $124.

Twelve barrels to the acre—more than an average yield—will equal 84 barrels, which at $3.00 per barrel, above the average price at harvest, will amount to $252.00. The difference between cost and receipts will be $128.00—some $18.00 per acre.

Seven acres in fruits, as above, at $500.00 per acre, will yield an increase of $3,500, less expense $128.00, equals $3,372, or some $480.00 per acre.

Now these are not fancies, nor are they "too good to be true." Get out of the rut of centuries. Plant each year, say 10 acres of orchards and small fruits, until your acres are covered. Mr. Randolph Peters suggests the following plan for an apple orchard: the trees planted at 30 feet apart will take 48; diagonally between the apple trees you can plant 35 standard pears or cherries, and then midway between each apple tree you can plant 82 dwarf pears or dwarf apples, or dwarf cherries, or plums, or peaches, or quinces, and between these rows you can plant small fruits, and which will have had their day before the fruit trees will bear full crops.

Go to work intelligently, enthusiastically, persistently, and you will not only elevate your business, but you will make it "pay." G. F. N.

Washington, D. C., April, 1876.

Since writing the above, *The Cultivator and Country Gentleman* has come to hand. From an article on "Peaches in Maryland," I quote a paragraph: "From 1,700 trees last year, I sold 5,000 baskets, which, on account of low prices, netted me $1,108.00,—a little over 22 cents per bushel; and although they were so low, they paid me better than any other crop of last year, and I had wheat, corn and oats." N.

Our French Letter.

The French Association for the Advancement of Agriculture

Has held its seventh session. The association counts over 3,000 members, including not only landed proprietors, farmers, and the representatives of every branch of collateral agricultural industry, but also men distinguished in the sciences, arts, and manufactures, and whose opinions have authority in the discussion of economic questions. The resolutions passed by this body exercise a powerful influence on the government, and bring about important legislative ameliorations. Permanent commissions, charged with special subjects, present their reports at the annual sittings, and such serve as the texts of the debates. Of course these discussions tend to modify, in the most useful manner, the habits of the farming community throughout France. Among the many interesting topics treated, were, the recompensing of teachers with gold medals, who have voluntarily established school gardens, and founded experimental allotments on their own account. At Mettray, where official agricultural problems are worked out, it was demonstrated, that beet intended for sugar ought only to be planted at mean distances. Professor Millot exposed, how fossil phosphates when treated with sulphuric acid, to be converted into super-phosphates, after a certain time decrease in value, in consequence of a certain portion of the phosphoric acid becoming insoluble. What is the value of this acid which thus retrogrades, and how can its percentage be determined in advance? That knotty question, how to determine the commercial value of sugar beet, was disposed of by the resolution, that the market price ought to be in a ratio to the richness of the root, and that the "densimeter" was the best instrument for ascertaining saccharine intensity. The phylloxera occupied the lion's share of attention, and the result of the general comparison of notes, systems and remedies was, that no effectual agent has yet been discovered for the destruction of the bugs, which up to the present have laid waste half a million acres of vineyards. All, however, is not barren from Dan to Beersheba; the disease does not spread, but its ravages are more intense where it exists, and entomologists have revealed the insect's habit of laying its eggs during winter. The difficulty to contend with is, the marvellous fecundity of the insect, which in four months can produce 800 millions of bugs. The sulphocarbonates have lost ground; they do not kill the insect, so much as imparting a fresh vigor to the attacked vine. M. Rohart's plan of steeping small cubes of wood in sulphuret of carbon, to be deposited around the roots of the vine, was welcomed warmly. These "picturesque mitrailleuses" discharged a good office.

Precocity in Cattle for Milk and Butter.

Dr. Schneider, of Thionville, treats an important subject from a new point of view. He demands, why not encourage precocity in animals for *milk*, as well as for meat? In the latter case, the object is to fatten an animal in 36, instead of 60 months, by good feeding. On the contrary, the powers of reproduction, (that is, the yielding of milk,) are most active, or precocious, where the dietery is sober, if not miserable. Poor families are most prolific, and weeds most productive. Fecundity is the ally of humble rations; and fat, the emblem of opulence, is not an attribute of virility. *Embonpoint* is incompatible with the faculty of generation. If a sterile cow or an ox, exact 36 months and good diet, to be precociously converted into meat, a heifer could in that period have produced upon a modest regimen, one calf, perhaps two, and from 12 to 14 months of milk; the production of milk is less costly than that of meat; it can be less expensively disposed of, and if meat has increased in price, so also have butter and cheese. The properties for fattening and milking are but one and the same thing, and pre-exist in the animal, only both aptitudes cannot be developed at the same time. Thus in France, Dutch or Normand cows are kept for the express purpose of yielding milk to the calves of the Durham breed.

Effects of Shearing Sheep on Fattening.

M. Weiske, of Proskau (Prussia) has confirmed the results now generally admitted to flow from shearing sheep, viz: that animals so treated are better suited for fattening than such as have not been shorn. Two Merino sheep, in full fleece, received during 17 days, a daily ration for each of 2¼ pounds of meadow hay; half a pound of crushed barley, and less than half a quarter of an ounce of sea salt. After

being shorn on the eighteenth day, the same ration was continued for an equal period. The examination of their manure showed, there was no difference as regards their digestive powers; they consumed less water after than before the clipping; respiration and perspiration being less. The appetite was increased by the removal of the fleece; the temperature of the body being less, more food was necessary to maintain the natural warmth, and the more rapid fattening is simply to be attributed to this increased appetite, and not to any marked superiority in the power of assimilating food. M. Weiske has also given from one-half to three grains of arsenic, the dose rising gradually, per day, to sheep, in a solution of water; he found the animals' appetite and capability of assimilating food increased; they drank more water and rapidly augmented in flesh.

Effects of Chemical Manures on Germination.

M. Lacroix, of Belgium, confirms the complaints that of late are too frequently heard, of the deleterious influences of chemical manures on germination, in the case of light soils and pending dry seasons. He has lost, as well as some neighbors, during the last year, his maize, carrots, turnips and potatoes, from this cause; the too close proximity of the seed with sulphate of ammonia and animal refuse. The seed pushed regularly and the plants thrive vigorously, where there was no contact with the chemicals. In a humid season, or where the manures are applied before sowing, and well incorporated with the surface-layer of the soil, the danger is less. In France, as a general rule, the fertilizers are distributed some time before the sowings; the process is said to be more conducive to the "nitrification" of the soil in addition.

The Beet-Sugar War

Has assumed large proportions in the north of France; putting aside the legislative elements of the question, the manufacturers and farmers have been at loggerheads. The agriculturist wishes to cultivate beet for feeding, as well as sugar-making; hence, he aims at a large yield of roots, a result that the manufacturer resists.—The dispute will likely be less ardent if the "densimeter" prove a reliable instrument for marking the saccharine value of the roots, irrespective of their size. The manufacturer, in general terms, cannot conduct his business profitably if a quart of beet juice does not yield a good quarter of an ounce of sugar. The farmer who produces 20 tons of beet per acre, can count upon a price of francs 20 per ton—being a money yield of francs 400 an acre. The agriculturist is ambitious to have two strings to his bow—to raise beet for sugar and for stall feeding. This latter object is making way, since Count Rœderer has successfully preserved his pulped beet—which has never passed through the distillery or the sugar factory—in trenches, with chopped green maize. The beet preferred for sugar is the variety not larger than a good carrot—not growing much above the soil—with leaves drooping rather than erect, ripening early and yielding 18 tons per acre.

Raising of Horses in France.

The annual horse show has just opened in the Palace of Industry. The number of entries is 896, of which Normandy alone contributes the two-thirds, and one breeder no less than 46 animals; the south of France, where Arab blood predominates, sends only 28 exhibits; the north 4, and the east 1. There is an improvement to be noted in carriage and saddle horses; as for draught cattle, the Percherons cannot be surpassed. The question of horse-breeding in France is one that is passionately debated; the truth, separated from the dust and din of the strife, is this: that the Government—though neighboring nations do the same—ought to abstain from supporting State studs, and leave the market open to the general operation of demand and supply; if the army wants good horses it can obtain them when the commercial price is paid for them. Those regions of France that repel the Government crutch to assist horse-breeding, are exactly those best supplied with the best horses.

The Culture of Parsnips

Is largely extending in France for cattle-feeding, and as an ordinary garden vegetable it is also in great demand; the soil that suits beet will satisfy the parsnip, and the manure is ploughed down or dug in; the seed is sown either in rows by the machine, or broadcast, and the plants receive but two weedings and hoeings—when the plants are five and fifteen inches high, respectively, the leaves are cut in the month of September, and allowed to fade for 24 hours before being given to the cattle; the roots can be taken up during the winter as required—frost does them no harm; the ration is 16 pounds three times a day, and the roots are cut; when given to pigs they ought to be cooked. In the west of France the parsnip replaces oats for horses, and, being very nutritive, all animals quickly put up flesh when fed on this root.

International Exhibition in France.

The agricultural community warmly supports the projected International Exhibition, and is resolved that its interests shall not be shelved on the coming occasion, as was the case in 1867.—Several gigantic plans are already sketched.—Nothing like taking time by the forelock. There is one idea that will be carried out pending the exhibition, viz: an international congress, where the leading features of each nation's agriculture will be explained and composed.

Iron in Wheat.

M. Gasparin has made an analysis, which amounts almost to a discovery. Boussingault and Fresenius have each drawn attention to the absence of iron in wheat. Gasparin has found, after several minute tests, 20¼ per cent. of iron in the grain of wheat, and 1¼ per cent. in the straw; and that while the phosphoric acid, magnesia and iron concentrated themselves in the grain, the silica and the lime accumulated in the straw. The same relative accumulation of salts were observed respectively in the kernel and the shell of oak glands. In every pound of wheaten bread there is then 1½ grains of iron. M. Gasparin also states that the quantity of phosphoric acid extracted by wheat from the soil is less than is generally supposed. The same distinguished chemist analyzed some lichens, grown on calcareous rocks, and found their ashes to be precisely composed of the same minerals as the soil derived from the disintegration of the rock.

M. Jahnke, of Berlin, has adopted the *Metayer* system in the cultivation of his estate, and a neighbor has followed his example. The plan has succeeded as well as it does here; proprietor and Metayer divide the profits—share and share alike. F. C.

Paris, April 6.

Farming, Grazing, &c.

Messrs. Editors American Farmer:

Farming is made up of many things, and much varied according to climate, soil and markets.—In whatever way it is tried, labor, perseverance and judgment are needed. Much depends on soil and culture. New and fresh soil will do well for most any cereal or grass. Grass and rest will recuperate almost any soil. Lands that have been laid aside or turned out have been restored by degrees; some have been improved by being plowed and seeded in oats, rye or buckwheat—which supplies vegetable mould. When plowed again and seeded, should be treated to a fertilizer, clover and useful grass seed. Timothy makes the best hay, and affords good pasture. The spear, lawn and blue grasses make good permanent pastures. Pastures judiciously fertilized and preserved are profitable; horses, cattle and sheep can for the most part be reared on them.—Feeding stock is rather another branch of the business. It requires the raising of corn and nourishing grains, liberal feeding and protection from bad weather. The litter caused by them, if properly cared for, affords the best manure.—Farming and grazing go well together, and are successful with energy and judgment. It is said a good standing pasture is a savings bank and a reserve; it can be drawn on and used whilst the other grasses are growing and allowed to mature. It is not prudent to turn on such pastures too soon.

Aside from grazing, which is profitable, nothing adds more to the beauty of a country than grass lands. The same may be said of country residences, especially when supplemented with groves and handsome trees. Milk, butter and cheese are profitable—to make them, cows and pastures are indispensable; hay is needed in the winter, and affords nourishment and ballast.—The majority of people will have butter, even at high figures.

The variety of stock is considerable, and utilized by dairymen, graziers and feeders. Sheep are profitable for the shambles and cloth factories. It is admitted that land will improve where sheep are pastured. I close with this sentiment: Let prosperity attend the farmer, the herdsman and the shepherd. RUSTIC.

Western Virginia.

High Farming.

Read by CHAS. T. HAILE, *before the Balto. Co.* (*Md.*) *Farmers' Club.*

MR. PRESIDENT:—We are all farmers by occupation, and any measure brought before us which has for its aim the advancement of the farming interest, ought to be duly considered by us; therefore I will make a few suggestions.

Farming in this section, at the present day, is, in my opinion, not as remunerative as it ought to be, for reasons I will try to explain. In the first place, we try to cultivate too much ground, for labor is high and grain low; in the second place, our land generally is not in as good condition as it ought to be, considering the facilities we have for making it better; and in the third place, we sell too much off the land; we do not make as much manure as we ought, and we do not sow clover enough. These are some of the reasons I give why farming is not as remunerative as it should be. Now I will state in a few words, the method of farming (in my judgment) that would pay better: In the first place, to farm less and manure more, or, in other words, high farming; for one acre put in proper condition will produce more than two farmed as we generally do. By doing this we could farm one-half the quantity of land, and make more produce, saving labor and expense. Keep all the land not otherwise occupied sowed in clover, and make all the grass we can and keep stock enough to consume it; by so doing, we can make a large quantity of manure, and save the money we pay for fertilizers, and make our farms productive and profitable. Also keep a good orchard of all the different kinds of fruit; it takes but little expense to manage an orchard, and it is profitable. Small fruit, such as strawberries, gooseberries, currants, grapes, &c., are a source of profit, if we have to attend market regularly with other farm products, but they are not if otherwise.

I think every farmer ought to keep a flock of sheep, (and keep the dogs from them,) for they are another source of profit on a farm. Many other things could be mentioned, but enough at this time.

The Potato Crop.

To the Editors American Farmer:

The low price of Irish potatoes in the Western and Southern markets, showing the immense supply of the past year's crop yet on hand, has had a very great tendency to diminish the area planted in Tidewater Va., for the early crop for market. Cargoes in Norfolk have been selling, loose, at 30 to 40 cents per bushel. There are some reports not well authenticated that the potato beetle was seen in some of our counties the past year. Have planted my usual crop of six brls., one of Snow Flake, four of Ex. E. Vermont, and one of Compton's Surprise—the last for late home market. There was about a barrel of Early Rose planted in the town and farm garden. About 150 bus. cotton seed used in lieu of guano, under 4 of the brls. Seed first a handful, then set, and a shovel of compost on the set placed 18 inches distant. We are bedding sweet potatoes. The Southern Queen, from your friend Massey, proves identical with our Hayman, which we think highly of for family use, and next to Yams. Our sweet potatoes wintered over in hills did not pay us, only fall price obtained, $1.50 per barrel.

Suffolk, Va. D. B.

The Dairy.

The Best Breed of Cattle for the Butter Dairy.

BY WM. J. SCHOFIELD.

Read before the Sandy Spring (Md.) Dairymen's Association, February 18, 1876, and furnished for publication in the American Farmer.

Different persons often view the same subject from different stand-points, each making his own estimate as to merits and demerits.

In estimating the "best breed for the butter dairy," the points to be considered are the quantity and quality of butter, and the net profit the herd will produce by the mode each may consider best to pursue. In order to do the subject justice so as to accommodate the views of all, I must bring before you the characteristics of several of the best and most prominent breeds of cattle, and also those of our native cattle, which I will endeavor to do as briefly as I can.

Native Cows.

Let us consider first our native cattle, which are the offspring of many breeds from various parts of the intermixed world; but from neglect and improper breeding, they have become no breed or particular race,—consequently not reliable to breed from for any specific purpose.

The term "breed" applies to animals of the same species possessing characteristics peculiar to themselves, which are the result of soil, climate, mode of life, and nourishment; and by selecting particular families possessing certain characteristics which we desire, and properly breeding from that family, by careful selection, for successive generations, these characteristics are with certainty transmitted to their progeny; it thus becomes a breed or race. By neglect of this law, the breed loses this power of transmission, and the tendency is to the normal condition.

Many persons claim that our native cows are as profitable for the "butter dairy" as any of the improved breeds. They say, we find as good milkers among our native cows as among the improved breeds, and that will make as much butter, and, when done with as a dairy cow, will make more beef than some of the improved breeds. This may be so with individual cases, but it does not apply to the herd.

A party wishing to start a dairy, must make long search to obtain a herd; and after getting the requisite number, a large per cent. will be only fit for the shambles. The progeny of even the best cows of the herd, if raised for the dairy, may prove a disappointment, entailing loss of time and profit.

Dutch Cow.

I will now ask your attention to the "Dutch breed," or, as it is sometimes improperly called, "Holstein." This is a very popular breed of cattle for the "butter dairy," and there are numbers of them imported into this country.

Dairying has for generations been the most profitable and consequently the favorite pursuit of the Hollanders, and has enabled them to become one of the most prosperous and wealthy people in Europe. They have raised up a remarkably large, strong dairy breed, of very deep milkers. Their dairying is confined principally to cheese-making; so that they have had in view in the raising up of this breed more the quantity of milk than its richness.

Jennings says: "A yield of from 16 to 25 quarts (wine measure) at a milking is not rare." This sounds large for cows to give from 8 to 12 gallons of milk per day. I prefer the testimony of G. E. Waring,—a gentleman of culture and intelligence, who travelled generally through Holland in 1875. He says the cows give an "average of from 16 to 24 quarts of milk per day," which is a very large yield.

I heard that Mr. Winans, of Baltimore, who had a large milk dairy, (I think 90 cows,) said that he found it very difficult to get cows that would average 6 quarts per day the year through.

I suppose the richness of their milk is about the average of cheese-dairy animals, which generally require from 15 to 16 quarts of milk to make one pound of butter; which would be from one pound four ounces per day in Holland.

When the cow is done with as a dairy cow, she will make a large quantity of excellent beef. We must bear in mind that the herbage in Holland is the best possible, both in purity and richness.

Durham.

Many persons when choosing a cow for the dairy have regard to the quantity of beef she will make, as well as her good milking properties. So I will now ask your attention to the Durham, which is a favorite breed for the dairy with some. Jennings says: "Great milkers have often been known among the Durhams, and that the dairies of London (England) are stocked chiefly with Short-horns and Yorkshires." We have also testimony in our own country of very fine milkers of this breed. I saw a Durham cow in the neighborhood of Philadelphia which the owner told me gave 32 quarts of milk per day. I once had a cow of this breed, which was as deep a milker as I ever owned; her milk was also rich, and made a large yield of excellent butter. As the Durham has been raised more for the shambles than for the dairy, it would be difficult to get a herd of good milkers among them; and even if obtained, we could not confidently rely on their progeny for the dairy. The Durham to keep up to its present standard requires a large quantity of more nutritious food than our herbage will supply. The same objection I suppose holds with the Dutch breed, but not in such a great degree.

Devon.

For all purposes combined, I suppose the Devon would be the best breed of cattle for this country,—as they are hardy, large, handsome, mature quickly, and do not require as rich herbage as some other breeds. They are a favorite with some for dairy stock.

Flint, in his work on "The Dairy," remarks, that he had "occasion to examine several cows of the celebrated Patterson breed (Devons,) which would have been remarkable as good milkers even among good milking stock;" but their milk is only average.

Ayrshire.

We will now pass on to the justly celebrated Ayrshire breed, which has been raised up in the county of Ayr, in Scotland.

This breed was produced from some of the Dutch race of cattle which were imported into Scotland about the year 1760. The Ayrshire has been bred especially for the dairy, without any regard to the shambles, and more particularly for cheese-making, which is a leading business in that part of Scotland. The Ayrshire, like the Devon, will thrive well on a moderately rich herbage, such as they have in their native country.

Jennings, in his work on "Cattle," and Flint, in his work on "Dairy Farming," say that all "dairy farmers who have any experience with the Ayrshire cows say they generally give a larger return of milk for the food consumed than any other breed." Jennings further remarks: "The absolute quality may not be so great, but it is obtained at less cost." I suppose all who have sufficient experience with the Ayrshire cows, admit they are the best breed of cattle known for the milk dairy; some claim it the best for the butter dairy. We occasionally see in our agricultural journals accounts of large yields of butter made from this race. There are numbers of them being imported into this country, which sell at high prices. Flint says: "The Ayrshire cow has been known to produce 10 imperial gallons of good milk per day." He further says: "Youatt estimates the daily yield of an Ayrshire cow, for the first two months after calving, at 5 gallons per day, on an average; for the next three months at 3 gallons, and for the next four months at 1¼ gallons." He says this will make 850 gallons as the annual average. He further says: "3¼ gallons of Ayrshire milk will make 1¼ pounds of butter," which is 9 quarts of milk to the pound.

I give this for what it is worth: I have no doubt of their unsurpassed milking qualities, but my experience with this breed is, that their milk is not above the average, and would require 15 or 16 quarts to make 1 pound of butter. I purchased two very fine thoroughbred heifer calves of this breed to cross with the Jersey, to increase the good qualities of both. The crosses were very fine animals, but did not fulfill my expectations. Now I have not one drop of Ayrshire blood on my farm! I know of others who kept butter dairies who have done likewise.

Guernsey.

We have discussed the dairy cow only in regard to the quantity of butter. In this day of great progress, not only in the arts, in science, in literature,—but in the culinary department we must consider the quality as well as the quantity of butter. Then let us for a few moments give our attention to the Guernsey race, which has for many years been bred expressly for the "butter dairy."

The island of Guernsey, the native land of this breed, lies in the English Channel, a short sail from the west coast of Normandy, and is one of the two largest islands in the cluster. The island is remarkably fertile, with a mild climate—never cold, and seldom excessively warm. It is very much isolated from the rest of the world, so that they have had no difficulty in keeping their race of cattle entirely pure from all other breeds, which has been done by public consent. Thus favorably situated for keeping their breed pure, and having specially in view two objects—quantity and quality of butter; to be of exquisite richness and high flavor. They had not only their isolation to favor this object, but an entirely suitable climate and rich herbage.

The Guernsey cow is small compared with other improved breeds, except the Ayrshire and the Jersey, but will make more butter, of richer quality and higher flavor than any other breed, except her near neighbor—the Jersey. Some authors on dairying speak unfavorably of the Guernsey, as well as of the Jersey. The reason of which may be, that they have not been much known beyond their native islands until within a few years. I will quote from G. E. Waring: he says: "Large stories are told (some of them authentic) of the productiveness of the cows of this island."

"The statement of Mr. F. Cairy, of Woodlands, Guernsey, that the annual average produce of five cows on his land has been 1,680 pounds of butter—336 pounds per cow." "These cattle are said to have been fed in the ordinary way, and to have been milked three times per day."—(Sept. No. *Scribner*, 1875—page 582.)

Mr. Waring also remarks in the same article, page 581: "Probably the finest cow, all in all, I ever saw, was a Guernsey."

I have no personal experience with this breed of cattle; but few have been imported into this country. All I have seen were remarkably fine looking cows for quantity and great richness of milk. Having said this much for this fine breed for the butter dairy, I now ask your attention to the race which has also been bred specially for the "butter dairy."

Jersey.

The Island of Jersey, the home of this fine breed, is also one of the English Channel group, and is but a few hours sail from Guernsey, and like it much isolated from the rest of the world, with even a more fertile soil, and more salubrious climate—a "perfect climate."

It is a disputed question between the Guernsey and Jersey people which is the better race of cattle for their special purposes, the Guernsey or Jersey; both claiming superiority for their own.

It is also somewhat the case with disinterested parties who have visited the Islands, and carefully examined both breeds.

The general decision is that for quantity and quality of butter there is no choice between them. To quote again from G. E. Waring, Esq., who says: "The Jersey cow, as we know here, has long been jealously guarded, by the Jersey man, as the best in the world for his purpose; and to be improved rather by careful selection within the race itself, than by crosses of any foreign blood." * * * "There still exists in force an old enactment of the State of Jersey, of nearly 100 years standing, by which the importation into the State of Jersey of cow, heifer, calf, or bull, was prohibited under the penalty of 200 livres, with the forfeiture of boat and tackle, besides a fine of 50 livres to every sailor on board who did not inform of the attempt at importation; the animal being decreed to be immediately slaughtered, and its flesh given to the

poor." * * * "The quite different cattle of Guernsey are not deemed foreign under these laws." * * * "But there are scarcely a dozen of that breed in the Island, and they and their progeny are discarded from the cattle shows."

"The secret of the great development of these cattle for the production of cream and butter lies in the fact, that for a very long time no other characteristic was considered in their selection." "The old Jersey cow was an exceedingly ungainly, raw-boned creature, with nothing to recommend her but her beautiful head." * * *

"About 40 years ago a few gentlemen interested in the improvement of the breed selected two beautiful cows, with the best qualities, as models." * * *

"From these there were laid down a 'scale of points' for the use of the judges in all cattle shows." "This accords so well with the opinion of the farmers of the island, that it has remained unchanged to this day."

Mr. Waring says: "It was for the sake of its cattle that I made my first visit to Jersey" * * * and the second visit gave me an opportunity for gaining a better knowledge and fairer estimate of the real merits of these animals; and confirming a belief, that no better service can be rendered in an important department of agriculture, than by making still more widely known the benefit which would result to our butter-making farmers from the general adoption of this breed. I would like to quote more from Mr. Waring, but it will make this essay too long.

The scale of points alluded to are 34 in number, many of which are mere matter of fancy, but resulting in the great beauty and symmetry of the animals as we now have them. So far we have only discussed the Jersey cow in her native home. There are about 2,000 annually exported—more largely to England than to this country. The demand for them seems to be greatly increasing as their great value for the butter dairy becomes more generally known.

Let us now for a few moments weigh their merits here. So far as I have read, or heard expressed, no one denies that the Jersey cow yields richer, more highly colored, higher flavored butter than any other breed, except the Guernsey.

There are some persons who object to the butter, because it is too rich, and too highly flavored; but this may be altogether in use. The quantity of milk is not so great as some other breeds yield, but the richness is much greater. That the yield of butter per cow, or for the herd, will exceed any other save the Guernsey.

We ask for the testimony. Dr. Twadell, of Philadelphia, showed me a Jersey cow which he imported, from which he made 17 4-16 pounds of butter per week. Wm. B. Taylor, of "Elm Stock Farm," New Jersey, advertises in the *Farmer's Friend* and in the *Country Gentleman*, a Jersey cow he owns from which he made 15¼ pounds per week, on pasture alone. (I wrote to Mr. Taylor to know at what price he would let me have a male calf from that cow; he promptly answered my letter and asked only $500.) Charles Sharpless, of Philadelphia, advertised in the *Country Gentleman* a heifer with her first calf, that made 13¼ pounds of butter per week on winter food. I cite these as some of the extraordinary yields, but I think we might say it is not uncommon for Jersey cows to yield from 9 to 12 pounds of butter per week, when fresh and under favorable circumstances.

I tried one of my Jersey cows which made 11 10-16 pounds of butter per week, and not under very favorable circumstances. At another time, when I wanted to make some pure Jersey butter to exhibit at a fair, the milk yielded 1 2-16 pounds of butter to 10 quarts of milk, which was her yield per day at that time. I think this was in September; she had a calf the previous winter. The same cow when fresh and on good pasture, yielded about 19 quarts of milk per day for weeks. My milk man observed to me one day, Minnie gets fresh whenever she goes on fresh pasture. I have now one of her progeny which is fresh, which gives 14 quarts of milk per day. I have never tested the richness of her milk, but would judge it to be as rich as that of her dam.

I have but little doubt that any Jersey cow or heifer in my herd will do as well, perhaps better, when at full prime age, and under favorable circumstances.

I believe the above remarks will apply to the average of all *well*-kept, *properly* managed, *thoroughbred* and *properly* bred Jersey cows! I will here remark, that there are many Jersey cattle in this country that are very badly bred, which has greatly dwarfed their size and good qualities. It is my experience, and I learn the same from some others, that the Jersey cow continues in milking all the time, from one calf to another, if permitted; although my practice is to dry my cows, and give them a month's rest. They generally give from 1¼ to 2 gallons of milk per day within one month of calving,—the time that I begin to dry them.

I have owned many very fine native cows, and I think my Jersey cows will yield me as much milk in a year as my natives did. It is allowed that from 15 to 16 quarts of average milk makes 1 pound of butter. 10 quarts of Jersey milk makes 1 2-16 pounds of richer and higher flavored butter.

The Jersey cow is remarkable for her docility, when kindly treated; and my experience is less troublesome every way to manage on the farm than any other I have owned. They are a timid, nervous cow; consequently require kind and gentle treatment. The males are generally the reverse,—becoming cross and showing depravity at about 2 years old.

We may as well unite fancy with utility, when we can do so without much cost or waste, and thus make the object of our interest doubly desirable—for profit and for beauty. I have before remarked, the Jersey cow in her native land is bred to 34 points, and has been for generations,—so that her peculiar characteristics, not only as to good dairy qualities, but her beautifully-colored soft hair, her moderately loose, soft, highly pigmental skin; her beautifully delicate, well-shaped, firmly-knit limbs; her large, soft, placid eye; her delicate, richly-colored horn; her neatly-formed head and neck, comporting with the general symmetry of her body, with many other points, some of which are fanciful, make her emphatically, as she is often called,

"the gentleman's cow." Some have a prejudice against these cattle, because they say they cannot endure the vicissitudes of our climate. I have raised calves of our native cows and Jerseys in the same stable at the same time, all having the same treatment. The Jerseys were as well every way throughout the year as the others. Keep the Jersey cow as any cow should be kept; she is as thrifty as our native cattle, and will also keep better, give more milk and butter, on moderate food, than some other stronger breeds. Some object to the Jerseys because, as they say, they are so small. If they do what we desire, and in a greater degree than any other breed, why object to the size? Although the size can be increased by proper breeding, without injuring their valuable dairy properties; unfortunately many of them are badly bred.

I want to offer a few figures to relieve the Jerseys of this prejudice against them. I suppose the average weight of the carcass of the Jersey as beef would be 400 pounds. Let us give any other breed or native cows an excess of 300 pounds, which at 10 cents per pound will amount to $30.00; in a herd of ten cows to $300.00; we will say after milking 8 years.

A herd of Jersey cows we will say make 1 pound of butter each per week more than a herd of native cows, (which is a low estimate,) or any breed we have discussed. 1 pound of butter per week for 48 weeks of the year—48 pounds at 30 cents per pound—$14 40 per year; in 8 years, $115.20 per cow; in a herd of ten cows, $1,152.-00;—which leaves a balance in favor of the Jersey of $850.00, besides the difference in the value of the calves, which I suspect would equal the above! I also use these figures for the homely but good old Guernsey.

We have now come to the point which we shall choose as "best for the butter dairy"—the Guernsey or Jersey. The Guernsey is an "ugly, unsightly animal" compared with the Jersey; bred for the two qualities—richness and quantity of milk, (and generally accorded to be about equal to the Jersey in these two points,) without regard to anything else.

The Jersey is the Guernsey's equal for richness and quantity of milk; and bred up to 34 points, many of which are for beauty alone; and in the latter quality is all our fancy desires a cow to be. Therefore, for the comfort of the family, and the profit of the "butter dairy," let us ever sing to the tune of Old Jersey, as the most valuable product of the farm, and the most beautiful flower of the meadow.

Another Mode of Growing Asparagus.

A correspondent of the *Gardener's Monthly* tells of a bed, of some 12x20 feet, planted on good level soil; and when its growth became strong, year by year covered with two or three inches of good rich mould. Up through this shot the stalks and crept the roots. The method was followed up every season with the result of larger growth and product, till the bed became an oblong mound of some 2 or 3 feet in height, and a perfect wonder in the quality and quantity of asparagus furnished for the table. That yearly blanket of soil, it is thought, was the only culture or enrichment given. *The bed was never dug with fork or spade.*

Live Stock.

Which is the Best Breed of Hogs?

Messrs. Editors American Farmer:

It cannot have escaped the attention of your readers who have had any practical experience with the various pure and mixed breeds of hogs grown by our people of the Middle and Southern States, that *each section has its favorite breeds* or crosses on native stock. That there is a very great difference in breeds as to growth, maturity and cheapness of pork production none can deny; at the same time it is equally true in hog-raising as in other matters pertaining to stock-growing, an immense deal is due to strict attention to the *economy of management* and *food supply* in growing the hogs. All healthy breeds of hogs, whether native or crosses or some of the so-called pure breeds, show a marked difference in their growth and weight, in proportion to the care and quantity as well as quality of the food consumed; at the same time we find under precisely the same circumstances, with the same feed in the same pens messing as it were together, certain breeds grow faster and make more pork at a certain age than others. It is not, however, always due to the *breed*, but often to the *dam of the pigs*, the *number* she has to carry, her feed and milking powers; and it is not infrequent to find a very great disappointment among farmers who buy improved breeds of pigs, and treat them like they do their natives running in the woods on scant fare. They soon become *less profitable* than the natives, and in a very short time, being compelled to hunt their own subsistence, nature lengthens the nose and legs to fit them for their position, and all trace of the short nose, short legs and broad backs of the improved stock is lost.

Which is the best breed for any farmer in any section, depends, in the writer's opinion, very much on his location, the number he proposes to keep, whether designed for pork or to be cured as bacon, the extent of the farm and his food supplies.

We have certain breeds better for pork than bacon and *vice versa;* some bear confinement well in close pens, thrive well in pastures, while others do better in large free ranges, and in some sections are raised at a comparatively small expense on the marshes and masts of the woods.

Many persons are not aware that the sweetness of the Smithfield ham, with its firm red flesh, was due in part to the manner in which the hogs were raised, *half wild all the year* and *corn-fed* in the fall.

No matter what improved breed the farmer may select as best adapted to his purposes, whether for crossing his stock or to breed pure; the conditions as to food, care and protection, which have been essential elements in the original production of this breed, must be supplied, or there will be *rapid degeneration.*

For the average farmer who raises his own supply of pork and a surplus, my impression is, as derived from more than ten years experience with sundry breeds myself, and that of my father who grew more than a hundred porkers

every year for home use on the farm, the best native brood sows are to be preferred to nurse and raise the pork hogs to any of the *pure-bred sows*.

The male hogs should be kept either in pens or close lots away from the brood sows and pigs, and never allowed to run with the sows; when he is 18 months old his successor should be selected only to commence service at 8 months old, when, if properly grown, he should weigh 150 lbs. gross. At 2 years old the boar makes a lard hog.

What is the best breed for me might not be the best for you, reader. After trying the White Chester, for many reasons I preferred the Essex, a small black breed; the sows of this breed kept too fat to be prolific, and were rather small at the age I wished to kill them for pork. The Berkshire crossed on large native sows gives me a fine spotted pork hog at ten months old, which fattens up kindly and rapidly.

The Berkshire crossed on a mixed blood sow, of two large breeds—Jersey Red or Duroc and Chester White—has yielded a spotted breed with drooping ears, very similar to the Poland China, and just at present the writer is inclined to think this breed crossed on the natives will prove my most profitable pork hog.

These hogs graze well, and like most *well-fed pigs* don't root much, and are in nature like Brahma fowls, exceeding docile, kind in disposition, having all the food qualities claimed for the Poland China as to rapid growth, and always fat, yet breeding early,—the best nurses of any breed I have had,—the only trouble being they are too kind to the other sows' pigs, and must be kept separate.

My impression is decided that the pigs selected for breeding purposes, either male or female, should be pushed forward free and apart from the herd of hogs, and not allowed to breed until well grown, well developed in every respect, and the result will be improvement to your own stock. I think it will pay any farmer who keeps only one breed of hogs, to infuse new blood into his herd by buying every year a boar of the improved breed best suited to his wants and that of his stock; and by this means a very short experience—the very best teacher in hog-breeding—will enable him to decide the question as to "which is the best breed of hogs for him?"

NANSEMOND.

Suffolk, Va., March 19, 1876.

Early Market Lambs.

From the *Shepherd's Manual*, by Henry Stewart, which was referred to in the April *Farmer*, and a copy of which ought to be in the hands of every one of our readers, we take the following interesting and useful extract:

There are some special objects in the winter feeding of sheep which require particular methods of management to ensure success. In regard to feeding store sheep, and when the chief object is the increase of the flock, and the healthful growth of the fleece, nothing need be said beyond what has been given in the preceding pages. But special management is needed for the production of early market lambs, and for the fattening of sheep purchased to ensure profit both in money and manure; in regard to these cases some special explanation may be pertinent. The production of market lambs, if rightly managed, may be made very profitable. This business may be followed on a suitable farm anywhere within 150 miles of a good market. The markets for lambs are found chiefly in the large cities: Washington, New York, Boston, Philadelphia, Baltimore, and Albany being the chief eastern markets, and St. Louis, Cincinnati, and Chicago, the chief western ones. Some few of the southern cities offer good markets for lambs early in the spring. April, May and June are the months when the prices are the most remunerative; after June the prices per pound for lambs are but little more than those for sheep. In April and May, a lamb weighing 40 pounds will often sell for $10. Those farmers who make the raising of early lambs a special business, follow one of two methods. In one case they keep a permanent flock of ewes, selected for their good character as nurses and milkers, quiet in disposition, docile, and easily managed, and ready to act as foster mothers to other lambs whose mothers have been sent away. The other plan is to purchase, late in the summer, a flock of ewes, as well selected as may be, from which to raise a crop of spring lambs; the ewes are then shorn, and afterwards fattened and sent to market before the year is complete. Which of these two methods would be the best to adopt depends upon circumstances. The first plan needs for its successful operation a farm suitable for pasturing sheep, or which has at least sufficient suitable summer pasture for the flock. For the second plan little or no pasture is required; a rough field in which the ewes may run while being fed for market, or may run upon the clover sod to be plowed for corn in May, being all that is required. A stock of ruta-bagas, which keep in excellent condition until June, if needed so long, is provided as a substitute for grass while the ewes are being fattened. This latter plan is well suited as an additional industry upon grain or dairy farms, in which some additional capital may be turned over with a prospect of its being returned in less than a year with a gain of 100 per cent. in money, besides a valuable addition to the manure heap.

The selection of ewes and a ram from which to raise market lambs, is the chief point for consideration, the wool being a secondary object. The form of the sheep and their temperament are the first points to be regarded in their selection; but if the flock is to be kept permanently, it is best to procure sheep which will yield a good fleece as well as a good lamb, as this will add to the profit. Single lambs of good size are more profitable than twins, which will generally be of smaller growth. It matters little about the breed, as this is not a point with the marketmen, although a black-faced Southdown is most in favor with them, because of its usual plumpness and fatness. A lamb from a grade Merino ewe and a Southdown or Shropshire ram, is fat at any age, and is soon ripe for market, and will sell better than a larger lamb that is more bony and less plump. A cross from a grade Merino ewe and a Cotswold ram, is the

next best lamb, if not altogether as good a one. A large-bodied, short-legged, broad-backed, native ewe, with some Merino and Southdown blood in her composition, is, perhaps, all things considered, the best sheep that can be chosen for a dam. A pure-bred Southdown, Shropshire, or Cotswold ram, makes the best sire, the preference to be given in the order in which they are here named. Ewes that produce twins should be weeded out of the flock, and those which bring a large lamb, and have plenty of milk, and are gentle and kind to their lambs, should be kept as long as they will breed. Ewes have been kept until 13 years old that have yearly brought and raised a lamb to maturity for market without missing a season, or losing a lamb. One ewe of this kind may be made to pay the interest on $100 each year, and it would be well to raise the ewe lambs of such choice dams to replenish the flock. Some ewes will raise twins, and by skillful management a ewe whose lamb has been sold may be made to foster another lamb, or at least be forced to help feed it. If the ewe shows any reluctance to adopt the strange lamb, she should be confined in a small pen, at stated times, and the hungry lamb turned in to her. The lamb will generally succeed in getting all the milk from her. If she is more than usually reluctant, she should be held while the lamb sucks, or be confined in stanchions (as described in a previous chapter,) for a time, until she becomes reconciled. The ewes thus made to serve as foster mothers will, after two or three seasons, accept the situation, and readily adopt the second lamb. In some flocks a lamb has occasionally sucked three ewes, and in some cases some enterprising lambs will forage around and get a meal from any ewe that will permit it to suck. It will be necessary to curb the enterprise of such lambs occasionally, lest they rob the others. When a flock of ewes is purchased each year, in August or early in September, they must necessarily be picked up in the most convenient manner, either from passing droves, or some well-known drover may be engaged to procure them. Fairly good ewes may generally be procured by either of these methods for about $3 per head. In selecting ewes from a drove, care should be taken to examine the teeth to ascertain their age, and none less than three or four years old, or what are called "full-mouthed" ewes, should be chosen. The ram should be chosen in this case as in the previous one. Whatever breed may be selected, compactness of form and vigor should be looked for, rather than size; a moderate sized ram, with a large roomy ewe, will produce a better lamb than a pair of the opposite characters. High condition in the ram is not desirable; a merely fair condition is more conducive to certainty in getting lambs; nor in this business is it best to confine the ram; the exercise with the flock being better for the animal's health than confinement. If the flock is too large for the one ram, it should be divided and separated, or two rams used, each being shut up on alternate days; no more than 50 ewes can be served by one ram in the time during which the service is required—or at most 40 to 60 days—for this is the time during which the season for selling lambs continues. The ram should not be less than three years of age. As ewes go five months or about 150 days with young, those ewes that are served in the latter part of August will have lambs in January, and these lambs, without any forcing, can be made marketable in April. All of the lambs should be dropped before the middle of March, and it will be found advisable and convenient to so apportion the ewes to be served, that the dropping of the lambs may be spread over the whole of this period as regularly as possible. The presence of dogs about a flock of this character should not be permitted. They are not only entirely useless, but are really an annoyance and an injury. After the lamb is a few days old, if thought necessary, it may be taught to suck some warmed, sweetened cow's milk, and any help to its growth, in the shape of extra food, will be useful. There is danger, however, of over-feeding a young lamb, which may be worse than under-feeding it, and caution is to be exercised in this respect; no more should be attempted than to encourage a healthy, thrifty growth. After the lamb is four weeks old, it may be taught to lick some fine bran, with a little salt mixed with it, or a little sifted oatmeal. As a rule, it will be safer to depend on increasing and enriching the ewe's milk, rather than to force the lamb to swallow food which its stomach is not as yet able to completely digest. It is highly important to prevent the lambs from being annoyed and depleted of their blood by ticks or other vermin. To this end the ewes should be dipped in the fall to rid them of ticks, and if a few should appear in the spring upon the lambs, they should be freed from the insect pests by careful hand-picking, repeated if necessary. In case the ticks should be too numerous for hand-picking, the lambs may be dipped. This will be absolutely necessary if they are to be kept until after the ewes are shorn, as then the ticks will leave the ewes on which they are unsheltered, and seek refuge in the closer fleeces of the lambs. When this happens, the growth of the lambs is suddenly stopped, and it is often the case that some of them are tormented until they finally die.

The marketing of the lambs is one of the most important parts of the business so far as profits are concerned. As has been said, the early lambs bring the highest prices, but it may be that the later lambs will be found the most profitable, as being less costly and troublesome to rear. When the proper market has been found, and a trustworthy commission agent to whom they can be sent for sale has been selected, the method of packing for shipment should be well considered. A roomy box, in which the lamb can stand or lie, but cannot turn round, should be procured for each lamb. The size is 36 inches long, 24 inches high, and 18 inches wide. It is made of lath 2 inches wide by 3 quarters thick. The best fastening for the top was found to be four pieces of soft twisted tarred hempen cord of the kind known as lath twine, and used for tying bundles of laths, at the saw mills. This form of box is also suitable for shipping stock lambs; these have been safely sent in them from New York to Charleston, S. C., and also as far as Denver, Col. In case of

shipping to a distance, a bag of feed is tied to one of the upper corners of the box, containing sufficient to last through the journey, and a feed trough is fixed at each end of the box, so that in case the lamb is carelessly put in wrong end foremost, or happens to turn around, a trough is ready for use where it is wanted. On the shipping card should be plainly printed directions to the express agent to give half a pint of feed and water twice a day to the lamb. Shipments for short distances should always be made by express, so that there may be no delays. The time of shipment should be so arranged that the commission agent may be on hand to attend to the lambs on their arrival. For distances of not over 100 miles, the time of travel is so short that no feed or water is needed on the way, but the lambs may be fed lightly and watered before they are placed in the boxes. In this way the lambs travel with so little inconvenience that no loss of weight occurs,—a matter which, when the price is 25 cents a pound, is worth consideration.

The Draft-Horse Interest.

At a meeting called by the importers of Norman horses, recently held at Chicago, Ill., about twenty importers and owners of imported horses were present. Elias Dillon, Esq., of Normal, Ill., was called to the chair, and Colonel B. H. Campbell, of Batavia, Ill., acted as secretary. A permanent organization was agreed upon, to be called "The National Association of Importers and Owners of Norman Horses," and officers were elected for the term of two years, as follows: E. Dillon, President; Colonel B. H. Campbell, Secretary; and Mr. J. L. Clark, of Onarga, Ill., Treasurer. A Board of Directors was also elected, and the meeting proceeded to business. Colonel Campbell stated the object of the meeting to be to agree upon some plan for the publication of a stud book for the registration of the imported French horses and their produce, and to fix a technical name for their horses, and make such rules and regulations as would protect the interests of importers and breeders of these valuable horses. It was agreed that the qualifications of membership should be ownership of imported or native full-blood stock, thus excluding the owners of grade horses. The question of the importance and practicability of a stud book was discussed, and it was agreed to take steps to begin the publication of such a record at once. Considerable discussion was entered into upon a name for the French horses, and it was finally agreed that the Picardy, the Norman and the Percheron horses were essentially the same, and should be called the Norman horse.

Holstein Cattle.

Isaac Augur, agent of the West Pittsfield (Mass.) Shakers, writes this to the New England *Farmer:*

Having heard, from time to time, comments through the public journals and verbally, some in favor and some opposed, I offer a few remarks which have grown out of actual experience concerning the merit of this noted stock during the past eighteen months. Having owned two bulls and two cows, thoroughbred, and having seen their product in milk, and butter, I feel able to say something in their favor.

One cow, seven years old in the Spring of 1875, calving March 17, has given, on an average, twenty quarts per day to the present date. I tested her milk in butter from the 13th of June for seven days, during which time she made fourteen pounds of nice butter, with no extra feed and no more than a common pasture.

The second cow, six years old in the Spring of 1875, calved September 23d, 1875, and after four or five days the milk was reserved by itself and set for cream, after letting the calf suck what it would three times a day. From the surplus of seven days, I found on weighing the butter, 13 pounds of a fine article, and, in total quantity per day, after three weeks of the time of the calf sucking, she had averaged from twenty-four to twenty-six quarts of milk per day.

November 24, 1874, I bought a thoroughbred imported Holstein bull, one year old past, and his gain in ten months is four hundred pounds, making an average of forty pounds per month, and not on high feed.

They are a fine growing stock, large, good feeders, and I can say, with all freedom, that they are in my estimation the best for market, milkers, butter, cheese, oxen and beef, of any thoroughbred stock now known in our country.

How to Break a Balky Horse.

A correspondent of the New Orleans *Home Journal* has the following on this subject:

Balky horses may be divided into three classes:

1st. Such as do not like to go from pure laziness, or stop when tired and refuse to go any further. This is a balky horse in a very mild form, and can generally be cured by any good horseman.

2d. Embrace such horses as are really stubborn, and refuse to go from a headstrong disposition to have their own way. This class are, generally, the most troublesome, but, in fact, are the easiest to break; and, when once broken, seldom make any more trouble.

3d. Are timid horses combined with a stubborn disposition, and often refuse to go from fear as well as stubbornness. This is the worst form of the balky horse and the hardest to manage, but can be broken so as to work good, but can never be considered really safe.

One important point should always be remembered in breaking horses; always speak kind and pleasant, though you may use a commanding tone and even harsh means, but never lose your temper.

Now suppose we are to commence to break a balky horse of class second, and that he is sufficiently gentle to know what is wanted of him. Put on your harness and hitch him to anything you desire, either single or double, as you feel disposed, and give him the commanding word to go ahead. If he goes, you have nothing to do or say but let him go on and do your work; but if he refuses to go take him out immediately, take all the harness off except the

bridle, and take a small rope the size of the plow line, and tie one end to the bit on the right hand side, and pull it through the ring of the left under the chop, pull his head around to his left side, and slip the rope under his tail like a crupper and make it fast, keeping his head tolerable close to his side. Now all is ready, so let him go, and take a good long whip and make him go, talking kindly to him all the time. He will travel like a dog after his tail, for he can travel no other way, but after a while he will fall down, when you will immediately let loose the rope and let him get up; now talk kindly to him and caress him.

Your work is now half done, for you have only to tie the rope to the other side of the bit, and pull his head around the other way, and make it fast like a crupper, the same as before, and start him off again and let him go till he falls down a second time; let him get up immediately and hitch him up, and you will, probably, never have any more trouble with him. I have tried the above many times, and have never known it to fail.

Maryland Sheep Law.

We stated in our last that an act for the protection of sheep had been lost in the last Legislature. The bill, however, was reconsidered at the close of the session, and passed. It provides that the owners of sheep shall have full power to kill dogs injuring or pursuing sheep, unless the dog shall have first escaped to its owner's premises. The owners of dogs who have injured or killed sheep may be prosecuted before a magistrate by the owner of the sheep. The justice of the peace shall ascertain the amount of damage and give judgment, the money to be collected as other debts. He shall also require the owner of the dog or dogs to give bond for not less than $50 that his dogs will not thereafter kill or injure any sheep, and upon failure to give bond the dog shall be forthwith killed by a constable, who shall be allowed $1 for each dog so killed, to be taxed against the owner as part of the costs. The owner shall have the right to appeal as in other cases. Caroline, Cecil, Dorchester, Wicomico and Worcester counties are excepted from the operations of the law, which is one, we think, not likely to be very effective anywhere.

To Prevent Abortion.

Mr. W. R. Duncan, a well-known Western Short-horn breeder, sends the following communication to the *National Live-Stock Journal:*

Although I have at different times in your paper published in a very plain manner how I feed hemp seed, and in what quantities, to prevent or break up the habit of abortion with all females, yet I receive letters innumerable from all over the country, inquiring how much, how often, and and in what manner,—"Do you beat it up or feed it whole?" "Do you feed it all at one feed, or divide the quantity named into different feeds?" Sometimes they inquire if flax-seed will not do as well. As I have endeavored to give the public this infallible remedy without fee or reward, I will again, with your kind permission, publish all I deem necessary to prevent any one from committing a blunder in its use.

After pregnancy, if the female has aborted once or oftener, feed one pint of the clean seed in any kind of feed that they will eat (all at one time), once a week, until within one month of maturity of the fœtus in the womb, when it should be left off. If the animal has aborted frequently, I would feed one pint of the seed every four or five days, until after the usual time of the abortion. After passing that period, say, one month, feed the same quantity less frequently until within one month of delivery. This quantity will be quite sufficient for cows, mares or jennets. For ewes, feed one-half the quantity once a week. For sows, make a tea and pour into their slop or milk. Ladies can treat themselves with perfect safety and success for the same trouble by using a teacup of warm tea, made by drawing the seed (say a tablespoonful at a time), in the ordinary way of making tea, whenever threatened; relief will be immediate.

No veterinarian has ever given the public so reliable a remedy; neither has the medical profession ever been in possession of such a remedy for our own race. I have not failed in a single instance in twenty years, neither have I ever known any one else to who followed my directions, and the agricultural journals of the country will confer a favor upon the public by calling attention to the wonderful powers of this remedy.

Veterinary.

How to Cure Scratches in Horses.

First cleanse the heels from all dirt and other foreign matter with a strong suds made by means of carbolic soap and warm water. This done, dry the parts well and be careful to remove the soapy matter thoroughly from the sore, in order to prevent the collection of dirt. Then dress the heels with a lotion composed of carbolic acid, one part; cold water, forty parts, three times a day. In one quarter of an hour after using the lotion, rub over the diseased surface with glycerine, and keep the parts supple with it. Give him, mixed in his feed of grain, night and morning, one and a half ounces of liquor arsenicalis each time, and continue this treatment for a time after his heels have dried up.—*Turf, Field and Farm.*

Tansy tea is said to be a sure remedy for bots in horses. Experiments tried upon bots show that while they resist the action of almost every other substance, they are quickly killed by tansy.

Inflamed Udder.—A correspondent of the *American Agriculturist* gives the following as a successful mode of treatment for inflamed udder:

"To relieve an inflamed udder it should be well bathed and fomented with warm water, several times a day. If there is difficulty in drawing the milk, a solution of carbonate of soda or saleratus should be injected with a common syringe into the teat, and milked out again repeatedly, until the milk comes freely. The alkaline solution dissolves any milk that may have clotted in the udder, and which stops the flow. This relieves the inflammation, which is greatly increased by the absorption of the milk in the diseased glands."

The Fishing Interest of Maryland.

Messrs. Editors American Farmer:

Since my article upon fish-culture in the April No. of the *Farmer*, 1875, I have continued my examination of the fishing interest of the State. In my last article I had worked up the number of fisheries to one hundred and seventy-six (176.)

Further examination shows most clearly that we have largely over two hundred, (200,) probably two hundred and fifty (250,) with room for as many more. Notwithstanding this fact, Mr. Fergusson reports only thirty-one (31) fisheries for the State, and has to borrow fifteen (15) of them from Virginia.

Every intelligent man is supposed to be able to give a reason for what he does, and when he fails to do so the public have an undoubted right to draw their own conclusions. It is clear, then, to my mind, that our commissioner does not want to let the people nor the Legislature know the extent of the fishing interest of the State. Other States make shad and herrings the staple fish above all others. Our commissioners go in for fancy fish, which will impoverish the State rather than enrich it.

Mr. Fergusson reports upwards of nine millions of young shad turned out in the waters of the State; this is a mere bagatelle. The Connecticut commissioners a few years ago, "turned loose in the Connecticut river, 90,000,000 of young shad." "The benefit was not merely temporary, but has lasted to the present time; so that in the height of the season, shad can hardly be disposed of at $3 a hundred."—(*Report New York Com., for* 1875, *page* 5.) Nothing is required to produce the same state of things here in Maryland, but a *little wise legislation.*

Happy would it be for the people to be able to get shad at $3 a hundred—which is about *one cent per pound.* Our farmers would feel the immediate effect in being able to procure cheap food for their hands.

Our commissioner in his report seems to forget that the United States commissioner, Prof. Baird, is entitled to a part of the credit of the nine millions of young shad reported by him. Mr. Jonathan Mason told me at Moxly's Point, that Prof. Baird *paid him for his services.*

I have carried my examinations upon this subject in no other direction. I have examined the probabilities of a sufficient market for an increased supply of fish. Mr. T. W. Post, of Baltimore, wrote me that that city took about 50,000 bbls. of fish;—25,000 bbls. Eastern herrings; 6,000 bbls. of North Carolina, the balance from our waters, consisting of shad, herrings and taylors, &c. With shad at $3, and herrings correspondingly low, say even at $3 a thousand, Baltimore would take 100,000 bbls. Norfolk, Richmond, Alexandria, Washington and Georgetown would take as many more. The facilities for the distribution of fresh shad is so great that the Northwest and Southwest would simply take *untold millions.* So that we have every reason for paying attention to the increase of shad and herrings. The improvement of 150 fisheries, as I showed in the April No. of the *Farmer* for 1875, would put afloat at least one million of dollars in this State. In fact the increase of our fishing property would be worth infinitely more to the State at large than the taxing of the Balto. & Ohio Railroad. But what is the use of talking or writing upon this subject: our rulers appear to be more interested upon party success than they are upon the prosperity of the State. No one knows better than the reformer what an up-hill business it is to instruct those who have no ears to hear nor eyes to see. No one understood this better than the old Prophet who said: "*Here a little and there a little.*" "*Line upon line; precept upon precept.*"

OLIVER N. BRYAN.

Accokeek P. O., Md., April 8th, 1876.

[*To be continued in the July No. Farmer.*]

Poultry Yard.

Hens That Don't Set.

The non-setting varieties of fowls comprise the different kinds of Hamburgs, Spanish, Leghorns, and Polands, and also some of the French fowls, yet we often meet with individuals of the foregoing breeds which are medium sitters. Non-sitters, if well bred, will not give one confirmed case of sitting among fifty birds, though they sometimes sit for a few hours or a week. These correspond to the sitting fever of the incubating breeds. The instances of fowls sitting steadily, although belonging to a breed of pure non-sitters, show reversion to the primitive type when incubation was universal. A cross between two different breeds of non-sitters will produce a race that will sit as regularly and persistently as any fowls. Some crosses between breeds are very desirable, but non-sitters should be kept pure, or the trait which constitutes their principal value will be lost. Where many fowls are kept it is better to have the larger part consist of some non-sitting breed. A great saving may be made in a sitting breed to produce a few good mothers. The rest, say three-quarters of the whole of your stock, should be of some breed of non-sitters. It is as easy to take care of 200 non-sitting hens during the warm season as 100 of a sitting variety.

Green Food for Poultry.

Green food is essential to the well-being of poultry at all seasons of the year. When fowls are limited to confined quarters, this must be supplied to them, artificially, to keep them in good health.

In winter time we can give them cabbages or chopped turnips and onions from time to time; short, late dried hay (or rowen) is very good for a change; corn-stalk leaves, chopped fine, they will eat with a relish.

In early spring-time, when the ground first softens from the frost, pasture *sods* thrown into their pens will be ravenously eaten by them; and as soon as the new grass starts (unless they can have free access to the fields or lawn) they should be supplied with this excellent succulent daily. For the young chickens, nothing is so beneficial and so grateful, as a run upon the newly grown grass; and next to this indulgence they should have an ample supply of cut or pulled grass, every day.

It should never be forgotten, that one of the most important things to be observed towards keeping our fowls in good heart, is the regular supply we should furnish them of green food.

Turkey Breeding.

A flock of well-grown turkeys make such an agreeable addition to the receipts of the farm, and they are often raised with so little trouble, that I wonder at the seeming indifference of so many farmers with reference to them. The rules for breeding are simple and easily understood, and failures are due to two prominent causes—one, the weather, which, in some seasons, put at fault the utmost possible care; the other, negligence.

A hot and dry season is well nigh an essential for success with turkeys. This is so important that it is of little use to be in haste to get turkeys hatched early, as we may do with chickens: though old birds are tough enough, young ones are exceedingly tender. If brought out by the first of June, it will, in most cases, be early enough. Even if they live through such chilly and damp weather as is common in May, they will not grow much until hot weather and bugs come to their relief; but, let them hatch out in June, in weather which drives the breeder to the shade, and little turkeys just enjoy it; they will stretch themselves in the sun and "lay off" with every token of delight. Damp, chilly weather is their ruin; rain abomination; morning dew a poison sure to blight the hopes of inexperienced or careless breeders. Turkeys must be allowed to range very freely to insure success, but not while the grass is wet—that is, during the first two months or so of their lives. After that, one need not be quite so particular.

Early turkeys not being advisable, the first litter of eggs from a hen may be reserved for a common hen in May, and the turkey hen be invited to lay a second litter, which she will do if broken up. I think the earliest turkeys do better in any case with a common hen, as she roams less and the chicks become more tractable, and the females from among them make more manageable mothers for next year.—*Rural World.*

Feeding Hens for Eggs.

A correspondent of the *Live Stock Record* says a hen may be regarded as a machine for the production of eggs. If only enough food is given to just keep her alive—to just run the machine—no eggs, of course, can be expected, but usually there is no trouble in this direction. People do not often err in not giving their hens enough; it is more frequently the case that they give them too much, and of the wrong kind of food. If a machine is fed with too much raw material, more than it has capacity to utilize, it becomes clogged in its action, and fails in its work. Or, if the wrong kind of material be supplied, the desired product will not be turned out. For a hen to produce an egg daily she must be well supplied with raw material out of which to make it. There must be albuminous substances, such as are found in meat and grain, out of which to form the white and yolk, and lime to produce the shell. Various kinds of grain contain these substances in different proportions, and this fact renders some kinds better adapted for the food of fowls than others. Wheat, wheat middlings, oats, barley, Indian corn, and buckwheat, are good articles of food for hens, if they are used alternately. If Indian corn were to compose the whole diet of hens, they would be rendered too fat for laying purposes, but as a regular diet it is very valuable. About three times per week the hens will need some bits of meat, to furnish more abundantly the albuminous element of the egg. Burned oyster-shells pounded, old mortar, bone meal, or something similar, should be kept by them at all times as material for shells. There should also be a constant supply of fresh, clean water. Hens should never be permitted to eat snow. Snow water is highly injurious to them. Many persons feed their hens all they will eat, and keep grain by them all the time. This is a bad practice. More hens are injured by overfeeding than in any other way. If a man eats all that he can, he becomes to some extent incapacitated for exertion, and if he continues the practice his system will become deranged. So the hen, when overfed, becomes too fat and is good for nothing but to be marketed. A simple rule in feeding hens is to give them as much as they will eat eagerly, but no more. As soon as they cease to eat with avidity, and will not run for the food, it should be removed. Fowls should be fed in this way three times a day, viz: morning, noon and night. The morning's meal should consist of soft food of some kind, for during the night the crop and stomach should become empty. If whole grain is fed, the fowl is obliged to grind it before she gets any nourishment, and delay in the morning is injurious; therefore, it is best to have scalded meal and bran with mashed potatoes prepared. At noon, a dinner of meal or grain may be given. At night, grain should be fed, so that the hens will have something substantial in their crops to last them through the night. In winter, Indian corn is good to feed at night; in summer, oats, wheat, or barley may be used. Wheat middlings are an excellent summer food, because of the flesh-forming elements contained in them, the requisites for producing eggs. Soft food should be mixed rather dry, so that when thrown upon the ground it will fall in pieces. When soft it sticks to the beaks, to the annoyance of the fowls, and it is also liable to derange their digestion. Fowls require also a daily supply of green or fresh vegetables, both summer and winter. Chopped turnips, cabbages, or apples, are suitable for winter. In summer, access to green grass is the best means of gratifying their wants. In order to be successful in keeping fowls, their wants should be attended to with the same care and regularity that is bestowed upon other animals; the increase in the number of eggs will then be perceptible.

Choked Cattle.

The following recipe should be printed at least twice every year, as it is a sure remedy: Take of fine-cut chewing tobacco enough to make a ball as large as a hen's egg, dampen it with molasses so it adheres closely; elevate the animal's head, pull out the tongue and crowd the ball as far down the throat as possible. In fifteen minutes it will cause sickness and vomiting, relaxing the muscles, so that the potato or whatever may be choking it will be thrown up.—*Cor. Country Gentleman.*

The Apiary.

Success in the Apiary.

An address delivered recently by Mr. Staples before the Tennessee Beekeepers' Association is replete with sensible, practical and valuable information.

In order to attain the greatest success in apiculture, it is necessary that we should have a large supply of workers on hand to gather the harvest when it comes. Bees do not make honey; but nature secretes it in the nectaries of the flowers, and bees gather it, and store it in the combs which they have made. The honey crop in this country is sometimes cut short by excessive wet or excessive dry weather. Therefore the necessity of having a strong band of workers on hand, that they may wade in at its early appearance and take off the first fruits of the land, and should the harvest linger, you need not fear the laborers will tire, for when there is work to do the little busy bee is always ready.

I might go off and describe to you the different kinds of bees, such as the common black bee, the gray bee of the South, the German bee, the Italian or Liguarian bee, the Cyprian bee, the Egyptian and the stingless bee of South America, also the various manipulations of the apiary, such as rearing queens and bees, removing honey from the combs, and placing them back again, etc. But I fear it would be monotonous, and intrude upon time. But if any of you are sufficiently interested to come to my apiary at any time, I will show you with pleasure what little I have learned concerning the bountiful gift of nature bestowed upon us by the Great Creator of all good.

The bee business is not unlike many other rural pursuits. Who, among you, would buy a fine flock of Cotswold sheep, a herd of Ayrshire cows, or a good stock of Berkshire pigs, and turn them on the commons, with no care, and expect a large profit? In the same way if he buys a full colony of Italian bees and puts them in a log-gum to take care of themselves, he may have all the profits; I do not wish to share them with him. We, however, have statistics from not only this State, but also from almost every State in the Union, where, with proper management, it pays from 100 to 300 per cent. on the capital invested Not only so, it is a business in which ladies can engage as well as men, and I believe some of the most successful apiarists in the United States are ladies. And I would that more of the ladies in this country who are left with small fortunes, and can hardly keep the wolf from the door, could be induced to turn their attention to the scientific keeping of a few colonies of bees.

Unhealthy Camellias.

Mr. Meehan says one of the best methods of restoring to health sickly Camellias is to cut them in severely, and plant in the open ground. They will push into new growth of an excellent character. They must be put into pots again in September. They can be set out in the full sun.

Agricultural Calendar.

Work for the Month—May.

The advancing season, with the influence of genial suns and warmer rains, brings abundant labor to the farmer. Of course, in almost every section, of first importance is the

Corn Crop.—In many parts of the country whither the *Farmer* goes planting has been done already, and in others preparations are complete. The preliminary steps, therefore, need no longer be dwelt upon, but we proceed to impress upon our readers, as has long been our custom, the necessity of clean and thorough cultivation. The presence of grass and weeds is not to be tolerated, and from the first appearance of the corn rows, the land should be carefully and systematically worked, that they may be eradicated almost before they begin to live. Frequent cultivation not only keeps down the weeds, but maintains the ground porous and open, to receive the benefit of the fertilizing influence of the atmosphere, the dews and rains.

Where the preparation of the ground has been delayed, from any cause, it should not be forgotten that the thoroughness with which the first steps are accomplished makes all the after ones easier and less costly. It is better therefore to wait still longer to secure perfect pulverization of the soil by the harrow and roller previous to planting, than to expect to make amends by cultivation afterwards for improvident and careless methods of preparation; although, even in this latitude, the earlier the crop can now be planted the better,—there being less loss by worms, and the growth being more healthy than when deferred.

In the cultivation we lean to the use, as far as and whenever practicable, of the cultivator instead of the plow. The latter implement is too apt to lacerate the roots, and, except under entirely favorable conditions, to do more injury than the weeds themselves, against which in corn culture a perpetual war is to be waged. The cultivator, though penetrating less deeply, keeps the surface pulverized and makes the fine soil itself act as a mulch to retain the moisture below. When the earth becomes crusted, as it will after every shower, the cultivators should be run through as soon as possible, that the surface may be lightened up and opened to the influences of the atmosphere, laden with fertilizing principles.

In the present and former numbers of the *American Farmer* several interesting and useful papers on various branches of corn culture will be found, which deserve attention from all our readers.

Potatoes.—Many prefer to plant their fall crop at this season, whilst others wait, and we think with reason, till June,—so that the tubers will not be caught just at the time they are making growth, by the late droughts so apt to occur in this section.

The crop deserves, demands, to achieve success, deep plowing and thorough pulverization. The land ought to be in good heart and well prepared. When using the plow do not go too

deep, nor too near the rows, and replace it as soon as may be by the cultivator and the hoe, using every pains to keep the soil light and porous, and to overcome the weeds. Make the hills flat or even hollow on top, not pointed lest the rains run off, instead of being absorbed. A dusting of plaster over the vines occasionally is an advantage.

For this crop the inorganic manures seem especially applicable, and liberal supplies of bone meal, superphosphate, lime, salt and plaster mixed, ashes and plaster, or the muriate of potash, all pay well in most seasons. Potash is especially needed, since it is an element largely entering into the analysis of the tubers as well as the vines. The old-fashioned kind of Peruvian guano was almost a specific for securing sure crops, but the later kinds "so called" seem to have lost their efficiency in this respect.

Barn-yard manure which is not rotted has a tendency to create and perpetuate disease and produce knotty and rough tubers, and its use is therefore to be avoided, if possible.

Root Crops.—Notwithstanding our American farmers possess a treasure in their Indian corn, there is room and necessity in their systems of culture for *roots;* and we predict the time is not far distant when their production will become almost as general as that of corn itself. We have long held and often said that no farmer is even now doing justice to himself, or his duty to the mute beasts committed to his care, who neglects to grow at least a moderate supply of some kind of roots. The quantity that can be raised to the acre makes amends for any deficiency in their nutritive properties, and their health-giving and health-maintaining influence should determine their production. Whatever kinds are cultivated, they can only be grown by deep cultivation and thorough manuring. With these pre-requisites, any variety may be, in ordinary seasons, counted upon as certain of giving good yields as most of our crops. For suggestions on cultivation see our last and other issues.

Millet is an excellent forage crop, and should be sown whenever there is a scarcity of other kinds. Of the German millet, a newly-introduced variety, rather astonishing stories are told by some of the papers, and in the Southwest especially it seems to be much sought after.

The ordinary Millet and Hungarian grass are similar in their nature and cultivation. They ought to be sown on land rich or well manured, and deeply plowed. About four pecks of seed is generally used to the acre, and it may be sown as soon as the ground is well warmed, or delayed until June or July.

Fodder Corn.—This may be sown in succession, as ground is cleared of other crops. A small patch heavily manured will give an astonishing quantity of fodder, equally as useful and as green. Sow in drills of about 2½ feet, and let the stalks stand ten or twelve to the foot. For feeding green, it is fit to cut when the tassel forms; for drying, delay till the pollen drops plentifully, or even till ears are well formed.

Tobacco.—Beds need unremitting care that the plants are pushed ahead, and that grass does not get possession. The condition of the plants will determine the question of setting out. Get the soil in good condition before this is done by repeated handling, the use of the roller, &c. This saves future hand labor, and fits it for the planting to make vigorous growth as soon as started.

Pumpkins—May be readily grown in with the corn. They make excellent feed for cows, are succulent and healthful. Give each hill a shovelfull of good manure, keep clean, and watch the bug which attacks them.

Working Stock—Need extra care now, and you will do well to see to it yourself that it gets it, and not rely upon hirelings to maintain the health and comfort of your animals. See, too, that they are regularly salted.

Horticulture.

Maryland Horticultural Society.

The April meeting was held in the café of the Academy of Music on the 20th. The display of plants and flowers was very handsome, and the attendance large, especially of ladies. These monthly meetings and shows steadily increase in interest and favor, and the society will hereafter probably be compelled to find more ample accommodations in a larger hall.

There was no business transacted, and the Examining Committee, Messrs. J. Mowton Saunders, W. D. Brackenridge and Chas. H. Snow, made the following report of awards:

PROFESSIONAL LIST.—Best 12 distinct named varieties of Roses in pots, $4, and best 12 cut blooms do., $3, to Andrew Patterson; Pansies, 24 cut-blooms, $1, to T. Fairley; best 12 varieties Verbenas in pots, $2, to Archibald Brackenridge; 2d best do., $1, to A. Patterson; best 6 Cinerarias, distinct varieties, $2, to Chas. Bucher & Bro.; best 6 specimens variegated-foliage Geraniums, $3, to James Pentland; collection of 12 Greenhouse plants, one-half in bloom, $3, to Archibald Brackenridge.

AMATEUR LIST.—Best 6 named varieties Azaleas, $3, Wm. H. Perot; best 4 Zonal Geraniums, $2, R. W. L. Rasin; 2d best do., $1, E. Whitman; best 3 double Geraniums, $2, E. Whitman; 2d best do., $1, R. W. L. Rasin; best 4 variegated-foliage Geraniums, $2, E. Whitman; 2d best do., R. W. L. Rasin; best 4 specimens Ferns, $2, R. W. L. Rasin; best 4 Cinerarias, E. Whitman; 2d best do., R. W. L. Rasin; best 3 Calceolarias, $2, R. W. L. Rasin; best collection Stove and Greenhouse plants, not less than 12, $5, R. W. L. Rasin; 2d best do., $3, Wm. H. Perot; best basket of flowers, $2, R. W. L. Rasin; best Rhubarb, $1, E. Whitman.

Special commendation was given by the Committee to Capt. C. H. Snow for flowers of Cinerarias and Geraniums; to Archibald Brackenridge for fine display of Succulents and bedding plants; to Bucher & Bro. for Sedums, Mimulus, Cinerarias, &c; to Jno. Edw. Feast for a promising seedling Camellia, and a fine Cyrtopodium puncatum; to Chas. Pepar for Japanese Primroses and a fine Bilbergia; to W. D. Brackenridge for Rhubarb, and to W. F. Massey for Pansies, of fine form and large flowers.

The discussion of the subject of *Bedding Plants* was then taken up, and Mr. W. D. Brackenridge read a short paper which provoked an animated discussion, participated in by Messrs. Jno. P. Oakford, August Hoen, James Pentland, Chas. H. Snow, and others.

Mr. Jno. Feast then read a paper, prepared with his usual care, on Botany, comparing the Linnæan system with the natural system of Jussieu, and presenting an outline of the distinguishing features of each.

It was decided not to appoint any subject for discussion at the May meeting, when the show is expected to be very large and interesting. If found desirable, some topic connected with plants, flowers or fruits on exhibition may be taken up.

"The Future of the Fruit Business of the Peninsula."

We find in the *Peninsular* (Del.) *News*, a very interesting address delivered before the Central Delaware Fruit-Growing Association, on 1st March, from which we copy the following portion, as shadowing forth the future prospects of the Fruit Business in the Peninsula. The views presented are equally applicable to that portion of the Peninsula belonging to our own State,—*the Eastern Shore of Maryland*,—which may be destined in time to be considered, "the garden spot of the world:"

Peaches have justly and wisely, considering our soil, climate and locality, engaged the attention of fruit men very largely. We would not encourage an abatement of interest, but rather an increase. But we would by no means encourage an increasing quantity, unless the quality should be more than correspondingly improved. Quality is now demanded. The peach reputation of Delaware has greatly suffered by crowding premature and imperfect fruit upon the trade. The growers have been losers by this unwise policy, and have glutted with poor fruit their own market. The transportation companies and the commission men have been the only gainers. The true line of policy for growers is to bring up the reputation of Peninsular peaches as the finest in the country and thus create a demand for our fruit. The name, "Delaware Peaches," should sell them, as "Orange County Butter" sells it. Men will have a good article if it can be found. It is suicidal to send third or fourth quality peaches to market at the expense of the first quality, as many did last year.

So far, as I see it, the peach business has only been *introductory* and *experimental*. The experiments have been in the main successful. They have taught us that peach-growing pays as well, if not better, pecuniarily, than wheat, corn, oats, or any other farm crop. These experiments have been instructive. Growers have learned that good peaches must come from good trees, and that good trees require manure and thorough cultivation, with careful pruning, and that the fruit demands thinning at whatever cost, and then needs to be carefully assorted and put in market in the best of order. All this knowledge of the fruit-growers of the past is bequeathed to the growers of the future. And now they have learned that it is unwise to make peach-growing the only source of income. Every man should raise the staples of life on his farm, if possible—especially should he connect stock-raising with fruit-growing. The less he depends on buying, the safer his business, even when with success he could buy his bread cheaper than he could raise it.

The past has taught us that other fruits besides peaches can profitably be grown on this Peninsula. Pears are quite profitable, and often more so than peaches. We know of an orchard of 457 Dwarf Duchess, now 20 years old, that for the last 12 years has never netted less than $600 in one year, and has netted as high (year before last) as $2,000, and average for 8 years $1,600 per year. All of the small fruits are here profitably grown, but time forbids even naming them.

Quinces demand more attention as a market crop than they have received, and wherever they have received proper attention they have been more than satisfactorily remunerative. We have netted from $7 to $10 a tree from a few trees for several years past.

The various kinds of fruits that must enter into the successful future of the business on the Peninsula, must be the study and frequent conference of the growers. It is clearly certain from the experiences of the past—from its promise of pecuniary success—from the capital invested in the business, and from the intelligence of those engaged in it, fruit-growing on this Peninsula is only in its infancy. Nature has designed this Peninsula as a great fruit-growing centre. But what shall we do with our fruit as it increases, *when markets are not remunerative*, as at times probably they will not be? "The prudent man foreseeth the evil and hideth himself," said a very wise man many centuries ago. It is as true now. Prepare by careful study for such a possible emergency. There remains to the grower, who looks into the future, a sure market, at remunerative prices, for all the fruits that can be grown on this Peninsula, provided he puts them in proper shape. Statistics, not at hand, show a larger demand for all kinds of canned, dried, evaporated and preserved goods from year to year. But our prices, owing to exaggerated notions, are still too high compared with a fair price for fresh fruit. We can afford to sell and make more money by the increased demand, at much lower rates. Peach, pear and apple-growing is reasonably remunerative at 50 cents per bushel, net, better than any other farm product on land worth $200 per acre, proportionally better on low-priced lands, as low-priced lands are better for fruit than grain, and require less manure than grain. We can raise and sell fresh, evaporated, or dry, can, and convert into conserves or marmalade, all the fruit that can be produced on this Peninsula, at prices so low as to defy successful competition anywhere else, and still make fruit growing sufficiently remunerative to satisfy the desires of moderately reasonable men—make it the best and safest business to be found, as well as the prettiest and most independent.

It is a good business and will pay well to simply *sun* or *kiln*-dry with the most simple apparatus. We knew men years ago, when dried apples sold for 5 cents per pound, who dried them at the halves, in small tight rooms, with an opening at the top, using fifteen or twenty trays made of lath, one above another, and a cook or box stove beneath, and made more money during the drying season than all the rest of the year. The various evaporating apparatus which ingenuity has devised and enterprise is putting into operation is a vast improvement, as it excludes the fruit from discoloration by the oxygenating process of the atmosphere, and improves the quality by increasing the amount of sugar in the fruit by the rapid chemical action, caused by a high temperature and exposure to a rapidly-moving atmosphere, loaded with many times its own weight of moisture. No decay can take place after the fruit enters the heated chambers, nor afterwards if immediately packed, as the moisture is almost entirely expelled, or to within five or six per cent. as it leaves the chamber. It will however immediately absorb from the atmosphere so as to analyze from ten to twelve per cent. of moisture. In this state it will remain indefinitely, being so dry as to prevent the troublesome attacks of insects, when kept over. But it is prudent, when the fruit is not immediately packed in air-tight or insect-tight boxes, to reheat it if it is to be kept over to another year. This will give character to all kinds of evaporated fruit. It will be insect-proof—no small matter to dealers who may buy more than is sold and are obliged to hold it till the next year.

Canned goods, if perfectly reliable, which, to our shame as a nation, they have not always been in foreign markets, will always command a large sale. They are handier in an emergency than evaporated fruit. Canneries ought to abound all through our fruit districts. Their brand ought to be a perfect guarantee that the fruit is as recommended.

Conserves, made from peaches, pears, plums, cherries and quinces, may be made a marketable product for the world; and Delaware conserves ought to be as popular and as much sought after as the French or Turkish. A large field, full of promise, is here open to enterprise.

For home demand, for our cities, and possibly for foreign trade, marmalade, with a formula of two parts of fruit to one of crystalized sugar, evaporated ½ in a jacketed porcelain kettle, will make an article of ready and sure sale when it is known to be as represented. Made according to this formula it will command a ready sale at ten cents per pound wholesale in large packages, and be sufficiently remunerative to the manufacturer. It can degenerate in value, however, so as to sell for three and four cents per pound. This kind of stuff now sells, retail, for twelve cents per pound in our cities. The demand is surprising.

Geraniums.

The very best soil for this seed is composed of one-third good garden loam, one-third leaf mold from the woods, one-fourth decayed wood fibre, such as we obtain from the hollows of old trees or beneath the chopping log in a long-used wood pile, with one-sixth sand. Use boxes from four to six inches deep or less (as large boxes are heavy and inconvenient to handle) Supply good drainage at the bottom, on which place coarse screenings of any kind, filling to half an inch of the top with the soil named, sifted through a quarter-inch screen. Press the surface uniformly and firmly, and saturate with boiling water; dry off a little, and then measure off into squares half an inch apart. Place a seed upon the line at the point of intersection and with the tips of the finger press each one so that it rests in a tiny hollow, just perceptible beneath the surface. Sift the same fine soil lightly over the entire surface, using a gauze screen. Keep the soil moist—never wet, and place in a south window in a warm sunshine. They will germinate in a week as a general thing. Cover carefully at night and remove to a place secure from frost, and when the little plants have formed their second or true leaves, transplant to two-inch pots, from these to three-inch, and so on.

Lawn and Pleasure Grounds.

Evergreens may be safely transplanted up to the first of June. Have the holes made sufficiently large to spread the roots well out, and be especially careful that from the time they are taken up till again planted, that the roots do not get dry, even for the shortest space of time. Deciduous trees that have been lifted earlier and heeled in may still be planted. A good mulch around all such, after planting, will be advantageous in preventing too rapid evaporation from the earth covering the roots. Herbaceous perennial plants may still be divided and replanted, and hardy plants wintered over may now be put out. The bedding out of the tenderer plants had better be deferred until the ground is well warmed.

Keep the walks cleaned and, as well as the lawn, well rolled. Grass edgings should be pared and box borders trimmed.

Greenhouse.

Hardy plants should be gradually removed and inured to the open air, placing them first under some shelter. This will give room inside for such summer-flowering things as Begonias, Caladiums, Fuchsias, Gesnerias, Achimines, &c.—These should all be shifted into suitable-sized pots, and so trained as to become symmetrical and handsome plants. Cacti of the Epiphyllum Section, showing flower, should have plenty of light and water. Camellias making growth should have partial shade and abundance of light and water, both at the roots and overhead. The same treatment is required by Azaleas, save that they need more light.

A New Shrub.

Viburnum dilatatum, says the *Botanical Magazine*, is a harty white-flowered Japanese shrub, with large leaves somewhat like those of the common Hazel-nut. There are ten or twelve Japanese species of Viburnum, including the present plant, which promises to be a welcome addition to our gardens. Some of the Vibur-

nums owe much of their beauty to the fact that they bear enlarged but abortive flowers in a way analagous to those of the Hydrangea. In the present species, however, the flowers are all normal, forming dense rounded clusters at the apex of the downy stem.

Double Begonias.

The English *Journal of Horticulture* says: The double-flowered Pelargoniums and Cinerarias are to be followed by double-flowered Begonias, some varieties of the tuberous-rooted section being announced by M. Lemoine of Nancy. It is only the male flowers of each fascicle that are double, the female flowers retaining their normal form. Of these varieties B. Gloire de Nancy is in color rich vermilion, and B. Lemoinei orange scarlet.

The Kitchen Garden.

Here are some hints from a contemporary which are worth reading:

The plow usually does better work than the spade, and saves a deal of hard work. For better looks and easier tillage, the whole garden should be planted in long rows, and a reel and line will many times be found convenient. The currants, raspberries and strawberries should be in similar rows, so that a horse and plow or cultivator can be got through them if need be. Put your chip manure and your refuse around the currant bushes, and leached ashes about the raspberries, and manure about everything. In fact, don't be afraid of manuring anything too much. If your land seems to be heavy or soured from years of manuring, and the crops do not respond to applications of manure, then, for one season, apply air-slacked lime, say a bushel to three square rods, and it will produce wonderful effects, loosening the plant food, releasing the stores of years, and lightening up the heavy soil. Upon old rich garden soils its effects are often wonderful, but it should not be applied to poorer soils, nor often repeated.

Don't try to get large crops by close planting; but, on the contrary, give abundance of room, since the soil is so rich that the growth will be large. But if it is desired to get double or triple returns, then in the abundant spaces between the rows, plant second crops just before the first matures. For instance, between the rows of radishes, lettuce or peas, can be planted late sweet corn, late cucumbers, for pickles, melons or beans for late use, or tomato plants may be set out for later crops. Between hills of early potatoes, late cabbages may be set—Winningstadt being excellent for this purpose. Between the rows of early corn, if wide apart, very rich shallow trenches may be made, and celery set out. The shade of the corn is an actual benefit till the plants are rooted and favorable weather occurs. Later in the season, as fast as ground is cleared, turnips can be sown, and often a large crop is raised in this way at little expense. Flat turnips also frequently produce a crop, if sown between the corn rows after the last hoeing. In sowing parsnip seed in early spring, radish seed can be mixed with it and help to trace the rows till the more slow-growing parsnip appears, and may be left till fit for table without injury. Every one desires to keep his ground clean from weeds, and thus double-cropping is little additional labor.

For accessibility and good looks, one or more paths should run the length of the garden, and both profit and pretty appearance will be secured by sowing a border of Tom Thumb peas, or some other dwarf sort. In early June, two weeks before the peas need to be pulled, beets may be sown immediately alongside of them to take their place. Beside a good crop they pay in the pretty border their highly-colored leaves make in autumn. In fact, if it were not that a beet is only a beet, it would be regarded as a pretty foliage plant.

Culture of the Cauliflower and Cabbage.

BY W. H. WHITE.

(Concluded from April Number.)

Transplanting.—The reasons why we transplant may not properly come within the scope of this essay, still they are worthy of the careful study of intelligent cultivators. To perform the work to the best satisfaction, with the least trouble, choose a cloudy time when the soil is moist without being pasty. Carefully remove the plants from the bed into a basket; a trowel or pointed stick is good to loosen the plant, when it is pulled out by the hand and placed in a basket for dropping from. A careful boy can drop these out, one to each hill, while a man follows and as carefully sets the plants, making a hole sufficiently large and deep to hold the roots well; this hole may be made with the fingers, a trowel, or dibble. Place the roots in this hole without doubling, draw the earth over them, and gently firm it so as to press the roots; when set, the plant should stand a trifle lower than in the bed, and the soil around it should be slighty dishing. If only a few plants are to be set they can be watered out successfully by taking up only a few at a time, making a hole so that the roots will go in, holding by the stem with one hand while with the other water is poured to fill the hole; the soil settles around the roots as the water soaks away, when the remainder is filled in and firmed about the plant.

After Culture.—As soon as the plants take root they should be carefully hoed, and once every week or ten days thereafter till matured, or so large that it cannot be conveniently done; a fresh, moist soil tends to early maturity. To obtain the best results water the plants two or three times a week with chestnut-colored manure water; muddy water from some stagnant pool is good. There is very little danger of a failure in a crop of cauliflowers or cabbages, provided the directions for good seed and deep, rich soil, thoroughly and frequently worked, with suitable moisture, are carried out to the letter.

The culture for fall and late crops is essentially the same as already described, except that the plants are set in June or, at least, the first week in July, as the season may be.

In marketing, cauliflowers need careful handling. Divest them of all loose and surplus leaves, and pack them in boxes holding fifty or one hundred each, in which they are sold to the dealer. Immature heads may often be improved to tolerably fair ones by pulling them and hanging, roots upward, in a barn cellar where it is above the freezing point.

Cabbage Culture.—Having given extended directions above for cauliflower culture, there remains little to be said on the culture of the cabbage. Cabbages are grown as an early, and also as a late crop. As an early crop market gardeners usually find them a money crop. A heavy sandy loam, strongly impregnated with shell lime, makes a congenial soil for this crop, as lime is a preventive of the disease known as "club-root." The same manures, etc., are applied as stated above for cauliflowers—perhaps a little lighter application answers the same purpose, and cabbages are gross feeders and need rich soil and plenty to feed on. Plants are produced as already described, and the whole culture differs in nothing essential from that directed for the cauliflower.

The most formidable foe we have to the growing, heading plants, is the new cabbage worm lately imported from Europe—the larva of the *Pieris rapæ*—which bores into and through the heads, leaving its excrement wherever it goes. A certain, effectual remedy or preventive of its working is lacking, although copiously watering the heads with saltpetre water is claimed as good, but the application needs to be often repeated; killing the butterflies and destroying their eggs is more sure, according to our experience.

Vegetable Garden.

May.—All the tender vegetables may now be sown or set out, and the work of cultivation, the destruction of grass and weeds, begun and steadily pursued. A good sharp-toothed steel rake is the most efficient tool that can be used in the garden, provided it is used early enough. If the weeds are attacked as their heads peep out of the ground, they are readily disposed of, and at a little of the trouble necessary when they reach some stature.

Lima Beans may now be planted, giving them rich soil. Do not have the poles too high; six feet is enough.

Cucumbers, Melons and Squashes should be planted as soon as the ground and air are warm. Give them all good rich hills, and a light soil as far as practicable.

Plant successive crops of corn every ten days or two weeks.

Cabbages and Cauliflower set out for early crop should be unceasingly worked, and the latter, when it can be done occasionally, thoroughly drenched, especially in dry seasons, with water. Seed for late crops should be sown.

Egg plants should be planted in rich soil, and occasionally treated to a dose of manure water. The potato beetle will probably be troublesome enough on these.

Peppers and Tomatoes may be set out, and seeds sown for late crops.

Succession crops of the hardier vegetables may still be sown, such as Beets, Carrots, Lettuce, Parsnips, Peas, Salsify, &c.

Scientific Corn-Growing.

In our last No. we gave Dr. Sturtevant's proposed method of growing his corn crop, and we now add his further processes as announced in the *Scientific Farmer* for April, with some suggestions on the possibilities of corn-culture:

We now have our super-phosphate distributed and our land plowed. Our next operation will be to spread the remainder of our chemicals, the potash and the nitrogen, broadcast upon the surface of the land, and then the use of the harrow until there is formed a satisfactory seed bed. The object of placing our remaining chemicals near the surface is on account of their greater diffusibility. Theory indicates that the potash will be distributed by the water of rainfall and absorption throughout a sufficient area for the plant use, while the nitrogen is so diffusible in its turn, that its greatest trouble is its waste through drainage; therefore, the nearer the surface it is placed, the more land it will have to pass through to get below the roots of the plants.

Our land is now ready to receive the seed. This we plant in drills, one kernel in a place, and each kernel six inches apart in the row, the rows being three feet apart. We may now calculate the possibilities of our yield as below: If each kernel should grow, we would have 29,040 plants on an acre, and if each stalk will bear one ear, then 29,040 ears of corn. As a matter of curiosity we will calculate on the basis of one good ear, which we have this day examined, and find as follows: Condition, perfectly air-dried; length, nine inches; Variety, an eight-rowed one.

Weight of grain, 5.4 oz. av. (2,362 grs.)
Weight of cob, 1 oz. av. (446 grs.)
Bulk of grain, ⅞ pint.
Number of ears required for a bushel of shelled grain by measure, 170.
Number of ears required for a bushel of shelled grain by weight, 166.
Number of kernels on the cob, 401.

That is, we could obtain, on the condition that each one of our stalks harvested one good ear (not the very largest,) from 170 to 175 bushels of thoroughly air-dried grain per acre, or a product of 400 to one of seed.

It is not our purpose to discuss the merits or demerits of methods of planting; for there can be no question but that either way, drills or hills, furnishes plants more than enough to give us theoretically larger yields than any farmer obtains in practice. We shall use drills because experience has shown us that while it took us last year about seventeen hours' labor to plant in hills, it has previously taken us about one hour to do the same work with a machine. So drills it is with us this year, and at the time of planting we propose to drop a small quantity of super-phosphate, some ammoniated variety, probably, say a barrel per acre more or less, in the rows, along with the seed, but protecting the seed from contact with it, as experience has shown that all concentrated fetilizers have an

injurious effect in contact with the germinating and embryo plants. We use this extra fertilizer in order that the young plant may be sure to find abundance of fertility in its first gropings for food. By this means we may hasten the early growth, and this is an important element for success. Oftentimes a difference of ten days in the maturing of the crop is all the difference between success and failure, and our own observation leads us to place a greater value upon the earlier than the later growth. It is the early growth that develops the blossom and the grain; it is the later growth that matures.

Experiments seem to indicate that a grain plant contains at the time of fertilization sufficient material already gathered for the ripening of a crop, although it is probable not enough for a perfect result. It also seems probable that the plant in its earlier stages organizes relatively more albuminoids or nitrogenous matter than at a later state of growth. We should therefore expect that an ampler abundance of supply of fertility in the earlier stages would have its effect, in our system of culture, which will be developed in another article, upon the quantity of the crop.

Let us close this paper with

A DIGRESSION.

It certainly speaks poorly for our systems of culture, that in practice we fall so far short of the crop which theory would lead us to expect. There is no theoretical reason why one hill of corn should be, under correct practice, inferior to its neighbor. There is no reason we can give why one stalk of corn should bear one or two ears, and its neighbor no ear at all. There is enough in this idea alone to task to the uttermost the energies of an experimental station, and the solving of this one question would be of untold benefit to the farmer. The capabilities of a field of corn are enormous, as compared to our experiences. Many farmers deny the possibility of an hundred bushel yield of corn grain as a farm crop, and the idea of a two hundred bushel yield seems perfectly visionary. What is easier than to suppose that each kernel of seed planted should produce at least one medium-sized ear? It seems, at least to us, easy to form such a supposition, for we have seen a hill of five plants bearing ten good ears of corn. To attain this supposition, all we would seem to have to do would be to plant uniform and carefully-selected seed in a uniform manner, and give the field uniform and proper culture. What the theoretical result of such a procedure in a field containing 29,040 stalks to the acre, or a field planted in drills three feet apart, and with plants each six inches apart in the drill, is shown by the following experiment:

We selected from the corn crib, March 5, three good, first-class ears of corn, 8½ inches long, of the 8-rowed kind. The weight of the shelled corn, and the possible product of an acre of 29,040 ears, is as below:

Per ear.		Per acre.		
5.57 oz.	or	10,109 lbs.	——	168¼ bus.
6.14 oz.	or	11,144 lbs.	——	199 bus.
5.00 oz.	or	9,075 lbs.	——	162 bus.

We then selected a rather under-average ear just seven inches long, which has been laying on a shelf in my study since harvest, and was perfectly air-dry, and found the grain weighed 1,806 grains or 4.128 oz. av. This would represent a theoretical yield of 7,479 lbs, or 133¼ bus. per acre.

When one medium ear per stalk will produce 133 bushels of grain (and dry at that) per acre, and one large or good-sized ear will produce, in like manner, at the rate of 200 bushels per acre, and when experience tells us that very often two large ears are borne on one stalk, and occasionally three or even four ears result from a single kernel planted, it is unwise to be satisfied with an average crop of 35 bushels per acre, or even a large crop of 100 bushels, but should strive to so study into and solve the conditions necessary for success, as to obtain, sometimes at least, an approach to the theoretical results.

The Next Cotton Crop.

This is the way the *Southern Cultivator* looks at the question of a large or a small crop, with some hints on planting the crop:

Shall it be large or small, is a question of great moment to Southern farmers. If large, with corresponding low price, not exceeding *cost* of production, the prospect is exceeding dark and gloomy. We trust that they will provide against such a contingency by raising an ample supply of provisions, so that, if without money, they may at least have bread. As far as appearances can indicate, they point to the planting of a large crop of cotton. Cotton brings ready money—money is very scarce—therefore plant a plenty of cotton. Such seems to be the unconscious reasoning of the farmer; and it would be very sound if the supply of cotton was not so large that production is already treading sharply on the heels of consumption; or, to be plain and brief, if the cotton market was not *glutted*. But it is, and so it happens, that the more cotton we make, the less (not the more) money we get.

What a pity it is that man will abuse the beneficent gifts of providence. As a *money* crop, nothing exceeds, perhaps no other equals, cotton. With proper rotations, it *enriches* instead of *impoverishing* the land—cleanses it from foul growth—through its debris and seed, lays the foundation for splendid crops of grain—is not perishable—is light of transportation to market, and always finds ready sale. And just because it is so good—to use a homely phrase—we "ride a free horse to death." We allude to the matter now, because it is not yet too late to diminish the acreage of cotton and increase that of provision crops. Corn, peas, potatoes, ground peas, chufas, &c., may be still planted. Nor is it too late, even yet, to avoid *credit* and reduce the operations of the farm. This, in our judgment, opens the true road to prosperity. Credit more than anything else has pushed cotton production beyond its legitimate bounds—credit has created the immense individual indebtednesses which hang like millstones around the neck of our farmers—credit has banished the hog from our borders—credit has swelled the business of merchants and middlemen into unnatural proportions, and drawn thereby into cities and villages, in shape of clerks and drummers, thousands of

young men, who ought to have been *producers*, and the *noblemen* of the land. But we must stop—our business now is to deal with the actual, every-day operations of the farm, rather than its *policy*.

COTTON PLANTING.

Late-planted cotton grows off better than early planted, but in localities where the seasons are short, it is important to plant early, to secure maturing of the crop. In such cases the plant may be pushed off by supplying it with easily assimilated food, immediately within reach, as by soaking seed in stable-manure water and rolling in plaster, or rolling in ammoniated fertilizers, or applying small quantities of these (say 50 lbs.) in the drill with the seed. The non-ammoniated dissolved bones or acid phosphates must not be used for this purpose, as they will injure the seed. Cotton should be planted very shallow—*one inch* is ample depth. But dry weather prevailing, it may not come up if the seed are so near the surface. The old-fashioned plan of opening furrow with scooter and covering with two furrows of the same, and then knocking off with a board just as the cotton is ready to come up, is the *surest*, but it is slow and tedious. A planter with wheel running in bottom of furrow, and pressing the earth in a narrow drill into which the seed fall, and covering with a board pressed down by a spring, or by a block, will, under ordinary circumstances, give a good stand. If the beds are rough and cloddy, it is best to precede the planter with a harrow, which has been several times described by us heretofore, and which we will briefly describe again, for the benefit of new subscribers. It is simply an ordinary triangular harrow, from 2½ to 3 feet in width behind, and with teeth set a little sloping backwards to prevent its fouling. The front tooth should be about 6 inches long in the clear, and the rearmost 10 inches, the intervening ones increasing gradually in length from front to rear. Such a harrow will *hug* a bed, clean it off, and still leave it elevated, and with a uniform rounded surface. We find it exceedingly useful in our own practice for smoothing and *freshening* the surface of beds. It is a great point gained in cotton culture to have the young plants in a straight narrow line, on a *smooth*, gently-rounded bed—the first working can then so easily be given it.

The Proper Application of Fertilizers.

At a meeting of the Massachusetts State Board of Agriculture, Dr. E. L. Sturtevant, after relating his experience in growing a crop of corn with artificial fertilizers, stated that he was so impressed with the influence of seed that he was sure, in his own mind, if all the seed had been of the first quality, the yield would have been from ten to fifteen, and, perhaps, twenty bushels more to the acre, and that it is desirable to get as many stalks upon an acre as your land and good culture will allow. On the question of the influence of cultivation, he said:

When we apply our fertilizer to the field, we know absolutely that that fertilizer is capable of raising a crop. The Professor [Stockbridge] has stated it here very strongly. I might add strength to his statement by referring to the experiments of Stohman, in Germany, who cultivated corn by water-culture. The corn was first germinated, and after the roots had obtained all the nutriment from the seed, they were transferred to water containing the ash of the corn-plant, and double the amount of nitrogen that there was of phosphoric acid in the ash. The ammonia was applied in sufficient quantities to give three parts of solid substance to a thousand parts of water. These plants were grown to the height of seven feet, and ripened their crop, which shows conclusively, beyond argument, that these materials—the ash element of the crop, and nitrogen—are capable of yielding a crop; and it also brings out another point: that if the elements are brought in contact with the roots, the crop can be grown from those elements. There can be no question about that. Here the Professor's theory and my statements agree; but the great question in raising all our crops is, how to bring the elements of fertility into contact with the roots. There is the practical question which underlies chemical farming, and if the Professor had taken more time, and had given you more careful details of the culture which he proposes, I should have been glad. I think his system is capable of bringing fertility into Massachusetts, enabling us to raise corn profitably by the purchase of our manures. But how must we apply those chemicals? We know more about chemistry than we do about almost any other subject connected with agriculture. I will speak now of these agricultural chemicals in a soluble form. We know that when these chemicals become soluble in the soil, the soil exercises a decomposing action upon them; that they are separated into their component parts, and while a portion escapes through drainage, another portion remains fixed in the soil; and we can say with regard to the phosphoric acid fixed in the soil, that there is no escape through leaching. It remains absolutely fixed. The potash is more diffusible, and some of it does leach through the soil, but only to a very small extent. The nitrogen, in the form of nitric acid, escapes very rapidly; in the form of ammonia, it is fixed to a large extent. I also know, from the record of certain experiments with turnips, and also from my own observation of the influence of chemicals upon corn roots, that the presence of certain chemicals develops the fibrous matter of the roots.

Let me quote an experiment where plants grew in cylinders filled with very poor clay earth, in which the chemicals were placed in a symmetrical manner in the soil,—one cylinder had the fertilizers in the centre, another had them arranged around the circumference, etc. It was found that the roots extended without many fibrous branches until they reached the fertilizers, and then they distributed themselves with their innumerable mouths to take up these fertilizers. Now, in growing the corn-crop this year, we placed all our fertilizers upon the surface of the land. What was the result? The result was that we had a greater root-growth near the surface than at lower depths. The moisture of the season probably saved us from a total loss, because, when the short drought came

s fall, our corn wilted so that the ears hung wn. Now, if those roots had received that utriment in a lower portion of the soil, they would have been out of the reach of the drought. How, then, can we apply these chemicals, in order to get the best effect from them? Evidently, reason answers: "Study the nature of the elements, and apply them rationally."—Phosphoric acid is very little diffusible in the soil. If you apply it to the surface-soil, and pour water upon it, it will pass down only a very short distance before it becomes fixed, and the roots have to approach the surface to come in contact with it. To apply phosphoric acid rightly, it should be put in deep,—ploughed in three, four, five or six inches deep. The potash, being more diffusible, might be spread nearer the surface. The nitrogen, in whatever form you apply it, being rather diffusible, should be applied upon the surface. In that way, we have taken the best precautions for giving our crop its food during the period of growth.

Now, having planted our corn upon a chemically fertilized field, the only question with the crop is to have these chemicals in contact with the roots during the whole period of growth. There can be no question, if there is enough fertility in the land, if that fertility is in a soluble form, and if the roots come properly in contact with that fertility, that the result will be a good crop. But what is the fact about roots? The roots occupy but a comparatively small area of soil. They feed from the extremities. They pick up their nutriment through the rootlets which are upon the small fibrous roots. Plants differ in the depth to which their roots penetrate. You can dig down into the soil where corn is growing, and you will be able to trace the corn-root down as far as you can ordinarily go. In one experiment as to the depth of roots, I found, upon land which had not been manured for fifteen years certainly, and probably for a longer period, and which yielded about one-third of a ton of hay to the acre, the grass-roots extended down twenty-five inches. These different roots extend to different depths, and they have different habits of growth, and the nature of the soil stimulates the growth of these roots to a different extent, according to the different kinds of plants. But confining myself to the corn-plant, I will state that the corn-roots extend laterally as well as downward; that they cover the whole space upon which they grow with immense rapidity. It is hardly conceivable how fast the roots of the corn-plant are formed; but they extend out laterally. Starting from the plant, they put out a few fibres throughout their length, and in a short time the tough coating of all the roots is incapable of taking up any food, and the extremities of the roots, through their extension, seek their food from a distance. Now, if there were any way whereby we could bring these fibrous roots back again, and make them occupy the whole of the soil; keep them from striking off in random directions, and make them fill the soil more completely, so that a large portion of the soil will be filled, then we can extract the utmost amount of the fertilizing power contained in that soil which the plant is capable of appropriating. This, I think, can be done.

Pomologists have known for a long time that root-pruning increases the yield of apple-trees, and increases the area covered by the roots. I have here the roots of two apple-trees,—one root pruned this last spring, the other not pruned. In my left hand I hold a root showing the effect of root-pruning; in my right hand, a root which shows the natural growth. When you cut off the root of a tree, immediately from the cut surface are put off small fibrous roots, and when you remember that it is only the small, young roots which take nutriment, you can see how immensely you add to the power of the plant to take nutriment from the soil by pruning, and thus increasing the number of the fibrous roots. You take a corn-plant and divide the root, and what happens? In less than twelve hours you will find that that root has commenced to throw out small roots which are almost innumerable. These roots seek out the nutriment in the land, and grow rapidly. The growth of the leaf of the corn-plant is stated to be about five inches in twenty-four hours, and it is probable that for each inch of the growth of the leaf there is a growth of several inches of these small fibrous feeding roots, which occupy so many of the interspaces of the soil, and take so much nutriment from it. Now, if we can change the roots nearest the plant from those coarse roots into innumerable small roots, we are giving that plant greater command over the fertility of the soil near the plant. In other words, we carry the roots to the chemicals, as well as carry the chemicals to the roots. Then, in a short time, if we cut the roots at a further distance from the plant, other fibrous roots are caused to develop, and these send out fresh fibres, and the plant has still greater control over the fertility in the soil.

Now, there is another point here, which is a physiological law. You can put a plant upon an extremely fertile field,—a field too fertile for it,—and the result is that the powers of the plant are expended in the growth of leaf, not in the development of fruit. You all know that. Now, if you can induce a check to that plant, without injuring the vitality of the plant, you have changed the forces which are being expended in too luxuriant growth of leaf, into forces of fruitfulness. Therefore, by this check which you get in root-pruning without destroying the vitality of the plant, you are changing the forces of the plant itself to the production of fruit instead of the production of leaf. The result is, that root-pruning will tend to increase the number of ears to the stalk of the corn; and, in fact, we all know in practice, that the better farmers cultivate their corn the most, and those farmers who cultivate their corn the most usually get better results,—that the results are larger in proportion to the cultivation. I don't know the largest number of bushels of corn that have been produced to the acre, but we have a record of one field in Ohio which is reported to have given two hundred and sixty-three bushels of shelled corn per acre, and another field in South Carolina is reported to have yielded two hundred bushels of shelled corn to the acre. Now, if by means of a preparatory study of the fertilizers to be used, the proper distance of planting, and the proper culture, we can give the corn-plant an increased advantage over the soil as it exists, we have increased our crop, and increased it very largely indeed.

Another thing. By checking the luxuriance of the leaf, you can plant your corn nearer together, and can get better results, because you get more stalks and more ears on the same area of land; at the same time you increase the tendency of the plant to bear more ears to the stalk. This idea, which I call a new theory in agriculture, because it thus far appears to have been overlooked, has been developed, I think, through the study of the corn-plant growing this year; and if chemical fertilizers are to be used with advantage, this theory is a very important one to be considered; for it enables the farmer to take advantage of the capital which he applies, in the form of fertilizers to his land, and to get from it its most advantageous results before it has time to be wasted from the land. But in applying chemical fertilizers to the corn-crop, we must be very careful to understand the conditions, as I said before, under which we apply them. The chemical fertilizer, rationally applied, I have no doubt will bring the desired results to whoever uses it; but there is no quicker way for a farmer to lose money than to buy chemical fertilizers and apply them without understanding the application. I am tempted to give an illustration as proving this point, and it may be of interest in itself. I will answer for the truth of it, although I do not care to give names. A gentleman, who is a manufacturer, but who is interested in farming, has quite a large farm, and cares more for results than he does for the expense of getting them. He has, among the waste product of his mill, the refuse of the burring-machine, which takes the burrs from the wool. It is almost clear wool-fibre. An analysis of that shows that it contains some fifteen per cent. of nitrogen, some two per cent. of potash, and but very little, if any, phosphoric acid. This wool-waste, one inch in depth, was placed under the soil seven inches deep. He had a man go along and push this wool-waste under the furrow as it was turned over. He planted grass-seed, and this year he harvested from that field twenty-five tons of hay from five acres. I saw the hay myself, and it was a noble sight for a farmer to look on. He was so successful in this experiment that he thought he would apply this manure to other crops and see how it would act.

He ploughed up quite a large field, and, except on a strip perhaps four rods wide and twenty rods long, he put this wool-waste, until the soil was quite heavy with it. He sowed upon that field the ordinary flat turnip. I saw this field during the last days of October, and on that part where the wool-waste had not been applied, the leaves were of a very dark green, very short, indeed, and the plants looked sickly. But beyond this was a field of turnip-tops, which came up four inches above my knee, so thick you could not see the land, and the leaves of a bright turnip green. As I was walking to the fields, and as the gentleman explained what he was doing, I said: "You will get no crop commensurate with the manure you have applied, but you will get leaf." The result was as I stated. Where there was no manure, there was a fair crop of roots, and very little leaf; but on that part of the field where the wool-waste had been applied, the plants had gone almost entirely to leaf, rather than root. The lesson to be derived from this is, that these chemical fertilizers, applied wrongly, can bring no profit. As applied to grass, the wool-waste had produced a profit, but as applied to turnips, it had produced no profit; in fact, it had resulted in loss, because the turnips were not so good for it.

HEN MANURE COMPOST.—A correspondent of the *New England Farmer* says: "I have three barrels of compost, composed of a layer of beef bones and meat, and a layer of wood ashes throughout each barrel, the whole well saturated with chamber-lye, and I have also five barrels of hen manure and one of air-slacked lime. How shall I prepare each for use this spring, and where can it be used to the best advantage—upon corn, potatoes, millet, mowing fields or newly seeded land?"

To which the editor replies: "The hen manure we would spread broadcast on corn land, and cultivate it into the soil. If for potatoes it may also be spread, or it may be strewn lightly in the drills, either before or after dropping the potatoes. We would not keep it for millet, as it would probably waste by fermentation before it would be time to sow that crop. Nor would we spread it on old mowing fields as a top dressing, unless composted with a large proportion of muck or loam. If the ashes soften the bones so that they can be pulverized, the whole mass may then be spread broadcast on any cultivated field, and worked into the soil. We have never had very good success dissolving bones with ashes. Are inclined to believe that bones can be worked up more economically by those who make it a business, than by the farmer."

Cheaper Production is Higher Price.

If a bushel of wheat or a pair of shoes can be produced by one day's labor, says the *American Agriculturist*, and sold for a dollar, the dollar is the value of the day's labor. If we can, by improved methods of working, or greater skill or activity, produce two bushels of wheat, or two pairs of shoes, by a day's labor, and still sell them for a dollar each, the value of the labor is two dollars. We have then doubled the value of our labor, without increasing the cost of it; consequently if the cost of living remains the same, our profit is doubled. The shoemaker, and many other mechanics, have succeeded by the exercise of increased skill in their work, in thus doubling their product, without a corresponding decrease in the price of their goods. The farmer has not succeeded in doing so much as this, although by the use of drills, harvesters, and thrashing machines, it costs him less labor to produce a bushel of wheat, than formerly. But the most laborious part of his work is not cheapened, nor is there any probability that it soon will be. Plowing and harrowing can not cost less for some years to come, than they now do. But work may be made to cost less, practically, if we can make it more effective. If we plow an acre of barren soil, we lose our labor altogether, and the cost is exactly equal to the value of the labor expended, because there is no return. If we plow an acre of ground which produces a crop worth exactly the cost of the labor, the labor is paid for, but there is no profit. If the

ground is rich enough to produce a crop double the value of the labor expended, the profit is equal to 100 per cent. upon the expenditure. The way to better profits very clearly lies in the direction of enriching the soil. This is the whole secret. What we then produce will cost but half what it formerly did, and we therefore get a double price for our crop, which merely represents so much labor. There is no fear that this method will be worked out, nor danger that the yield of grain will be doubled in a very short time. There is every certainty that those few farmers who will succeed in making their farms produce double the former crops, will not be forced to receive a less price for what they have to sell. They have every opportunity then to double their income in the course of a few years, if they will only take the right method. How can this be done? It cannot be done without working for it with brains as well as with the hands, and becoming more skillful and painstaking in the use of what means may be made available, and exercising some patience, for it cannot be done at once.

Stated Displays at the Centennial.

The following stated displays, under their respective dates, will be held during the International Exhibition. Applications for entry may be now made, on forms which will be supplied by the Chief of Agricultural Bureau, Mr. Burnett Landreth:

Agricultural Products.—Pomological products and vegetables, May 16 to 24; strawberries, June 7 to 15; early grass butter and cheese, June 13 to 17; early Summer vegetables, June 20 to 24; honey, June 20 to 24; raspberries and blackberries, July 3 to 8; Southern pomological products, July 18 to 22; melons, August 22 to 26; peaches, Sept. 4 to 9; Northern pomological products, Sept. 11 to 16; Autumn vegetables, Sept. 19 to 23; cereals, Sept. 25 to 30; potatoes and feeding roots, Oct. 2 to 7; Autumn butter and cheese, Oct. 17 to 21; nuts, Oct. 23 to Nov. 1; Autumn honey and wax, Oct. 23 to Nov. 1.

Field Trials.—Mowing machines, tedders, and hay rakes, June 15 to 30; reaping machines, July 5 to 15.

Live Stock.—Horses, Sept. 1 to 14; dogs, Sept. 1 to Sept. 8; neat cattle, Sept. 21 to Oct. 4; sheep, Oct. 10 to 18; poultry, Oct. 27 to Nov. 6.

The above dates may be favorable for the assembling in Philadelphia of societies and associations interested in the specialties above enumerated.

Trial of Plows and Harvesters, etc.

A grand field trial of harvesting machines and farm implements is to take place on the farm of the Indiana Agricultural College, near Lafayette, commencing June 26th next, under the direction of the Indiana State Board of Agriculture. A grand gold medal, $100, will be awarded for the best combined reaper and mower; a gold medal, $50, for the best single mower; and a gold medal of $50 for the best single reaper, will also be awarded. An entry fee of $20 will be charged on all machines competing for the grand gold medal, and $10 on all single mowers and reapers.

A plowing match will commence June 27th, the plows to be tested by actual trial, with a dynamometer. The Board will find ground. Entry fees for competitors for a gold medal, $10; for a silver medal, $3. Premiums of gold medals will be given for best plow for general purposes, and for the best two-horse cultivator. Silver medals and diplomas will also be given for plows of various kinds, and for various purposes. Also for various implements for planting and cultivating crops. Information in regard to rules and regulations may be had by applying to Alex. Heron, Secretary, Indianapolis, Indiana.

Portable Fence.

A correspondent of the *Western Rural* gives the following plan for making a portable fence:

I took four six-inch boards, twelve feet long, and three inches wide, an inch thick, four and one-half feet long; nailed the panels together with ten-penny nails. Soften them so as to clinch them. Put the end pieces a foot from the end, took staves five and one-half feet long, sharpened them so as to drive them in the ground. In the upper end of the stake I put a staple made from quarter-inch iron; the staple is seven inches in the clear, and goes through the stake and clinches and leaves a little over twenty inches between the staple and stake.

Then I set the stakes. All I have to do is to slip the top boards of the panel through the staples; then drive on top of stake so as to force slats of the panels into the ground a little; then the whole cannot move them, and it is a fence without a nail or pin. One great advantage in this kind of fence is that you can take out any panel in the fence without disturbing the rest. Two men with a team can take up and set out eighty rods in a day quite easily.

Treatment of Grapes.

Henry Wood, of Westchester county, N. Y., has furnished an account of an interesting experiment in grape culture, showing the importance of a dry bottom for the roots. He had a small vineyard for a family supply, placed on the slope of a hill. The trellis extended in a horizontal direction, and the ridges formed in cultivation, as a consequence, prevented the free escape down the hill of the water from rains. The fruit, which was chiefly of the Concord, Hartford and Iona, was poor, imperfectly developed, badly ripened, and more or less mildewed. After some years the trellis was altered so as to extend directly down the slope. The furrows, in cultivation, facilitated the escape of the water from the soil, and the fruit then became well grown, plump and excellent. Timothy grass was afterwards sown in the vineyard to facilitate the evaporation of the water of the surface as well as its escape down the slope, the soil being very rich. The fruit of the Concord and Hartford maintained its excellent character, the natural vigor of these vines and the fertility of the soil keeping up sufficient growth. The Iona failed.

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Transient Advertisements payable in advance—all others quarterly.
Advertisements should reach us by the 20th of the month, to secure insertion in the succeeding issue.

MAY 1, 1876.

Subscription Bills.

Many of our friends have responded to the little reminders sent out in the April *Farmer*, and they have our thanks. We hope all who have not yet done so will favor us, as soon they conveniently can, by their remittances.

There are some instances where persons who originally subscribed in clubs seem to think their single subscriptions should be received at the reduced price. To such we would say that the condition in the latter case is that there should not be less than *five* in the club, and that they should pay in advance, or at least by the end of March. This saves much labor in the way of making out bills, keeping accounts, &c.

Agriculture of Massachusetts.

By the courtesy of the Hon. Chas. L. Flint we have his Report as Secretary of the Massachusetts State Board of Agriculture for 1875-6. It is a volume quite up to the standard of former years and embraces a great amount of valuable matter, discussions at sessions of the Board, repofts on fertilizers, papers read and addresses delivered, &c. We have already drawn upon its contents and shall probably have occasion to do so again.

GERMAN MILLET.—It will be of interest to various inquirers to know that Messrs. Cromwell & Congdon, No. 51 Light street, Baltimore, have a supply of this seed, which they are offering at $3 per bushel.

North Carolina Lands.

The advertisement to be found elsewhere in this issue of lands in North Carolina deserves attention, not only from capitalists but from parties desirous of emigrating to a fine agricultural section. The country in which they are located offers many advantages of soil, climate and situation. The opportunity of colonies securing lands together is one that should not be overlooked.

Wood's Reaper.

Messrs. Thos. Norris & Son call attention to the new "Sweep-Rake" pattern of Wood's machine, which has not heretofore been offered to any extent in the home markets. John Hamilton, Esq., whose letter in commendation both of this reaper and the Malta Wheel Cultivator is given, is one of the most respected and reliable farmers in Southern Maryland, and in whose testimonial the utmost confidence can be placed.

Fruit Destroyed.

Our friend, Mr. G. F. B. Leighton, writes the *Norfolk (Va) Landmark*, under date of 20th April, that his Duchess and other early-blooming varieties of pears have been destroyed by frosts. Bartletts have nearly escaped, but not without a struggle, as on the 7th the temperature was 28°, and the blossoms were covered with frozen fog. Apples have escaped and promise well.

The Agricultural College.

We noticed in our last that the Legislature had refused any appropriation looking to the acquisition by the State of the private interest in this institution. An effort to give the representatives of the State a greater influence in its management also failed. Its reputation for past inefficiency seemed to have decided the Legislature to wash its hands of its further maintenance at the cost of the State.

After our last number was issued, we received the Journal of the House, from which we find that the proposed appropriation to the college for 1877 was defeated by a vote of 51 to 11. Voting solidly against the appropriation was the entire Committee on Agriculture, save one member, Mr. Gwynne, of Pr. George's; and, of the Committee on Education voting, there were four opposed to two who favored the appropriation. As it was within the province of these two committees to examine the condition and workings of the College, this result is significant as showing their judgment of its usefulness.

The annual meeting of the stockholders was held on the 12th ultimo, with a smaller attendance even than usual, and representing only some 4,200 shares—a minority—of the stock. The formality of re-electing the old Board of Trustees was gone through with.

Sale of Jerseys and Southdowns.

Col. J. Stricker Jenkins sold on the 20th ult., through Messrs. A. M. Harkness & Co., Philadelphia, his Jersey herd and Southdown flock.

Mr. T. L. Hume, of Washington, D. C., bought the following named cows and heifers at the prices affixed: Imported Bisma, $305; Imported Bisma 2d, $300; Imported Dagmar, $180; Zelda, $100; Fauvette 2d, $110. Col. E. H. Webster, Harford Co., Md., bought Minnie at $105. T. H. Shallenberger, Pottsville, Pa., got Thyra, $205; and Fauvette, $400. A. W. Fuller, Catasaugua, Pa., Thyra 2d, $80. J. D. Wing, New York, Niobe 6th, $300; J. M. Walton, West Philadelphia, Thyra 3d, $105; H. Ley, Allentown, Pa., Bisma 4th, $130. Mr. Hume, Princeton, N. J., bought the bull Jeweler for $110; J. F. Dell, Woodbury, N. J., bull Glendon, $92; J. Patterson, Chester Co., Pa., Bisma's bull calf, $55.

The Southdowns brought from $10 to $34 a head.

Kentucky Blue Grass.

On this subject the *Kentucky Live-Stock Record* has the following:

Kentucky Blue grass or Poa Pratensis receives its name from its bluish tint when full grown; it has often been claimed as the same species as the Northern June grass, or the Pennsylvania green grass. From its form and color this claim doubtless originated, but on investigation we find it a different and much superior variety. It is indigenous to all limestone land, and flourishes best where there is a clay base. The South Branch of the Potomac and the Greenbriar section of Virginia, perhaps, surpass any other localities outside of Central Kentucky in adaptability for its propagation. We have heard Capt. Isaac Cunningham, who, perhaps, utilized it as early as any Kentucky stock breeder, and whose close observation made him fine authority, say "wherever the short-jointed pipe-stem cane was to be found flourishing, there was soil best adapted to blue grass." Our own observation since has verified this assertion in reference to Kentucky. It grows well in a rather dry soil, but will grow in a variety of soils, from a wet meadow to the dryest of knolls. It is difficult to give it "a good set" in light, porous or sandy land, and it does not stand a severe drouth like some other grasses. If the summer is very dry, it appears to dry up utterly, and will burn if set on fire, yet even in its dry state it is very nutritious to all kinds of grazing stock, especially to sheep and cattle, but perhaps its greatest value is its power to endure the frosts of winter better than any other grass, and even in summer when it appears crisp and lifeless, it is "not dead, but sleepeth," and the first gentle patter of the rain animates it and sets it to growing. Among the characteristics that specially commend it to favor, are first: Its capacity to yield an abundant pasturage the year round, and may almost be called an evergreen, thus giving it advantages for winter grazing. Again, its fattening qualities are certainly equal, if not superior, to those of any other grass, giving rise to the most savory of meats. Cattle keep in good beef order on it during the winter. Especially in milch cows does its excellence manifest itself, producing a rich flow of sweet and oily cream, from which the choicest butter is made. It has fine capacity for holding the soil from washing away; with its thousands of thready rootlets, it clasps every atom of soil, and when it has thus taken possession, it admits of no rival, forming a heavy, rich, dark green sward, having at a little distance a somewhat bluish cast. An old "blue grass" farmer of this vicinity says: "Whoever has limestone land has blue grass; whoever has blue grass has the basis of all agricultural prosperity; and that man, if he has not the finest cattle, horses and sheep, has no one to blame but himself. He can hardly avoid doing well if he will try." It may be sown any time during the winter when the snow is on the ground, or, further South during some of the numerous rainy spells of their milder winters. Sow broadcast from three pecks to a bushel of the seed to the acre. In a loose soil, it is best to prepare it by feeding stock upon it and tramping the ground well; but in Kentucky lands, when it is desired to get it well set for a permanent pasture, no stock should be allowed to graze it for the first year, nor until the grass seeds in June of the second year, taking care never to feed the grass too closely at any time.

The Usefulness of Alabama Guinea or Johnson Grass Seed.

I have some information bearing upon the capability of the Alabama Guinea or Johnson grass to produce fruitful seed. In January, 1874, I obtained a bushel of the seed in Montevallo, Alabama—latitude 33—planted some on four acres of land, in latitude 32, prepared in all respects same as for cotton, and obtained quite a satisfactory stand. A portion was allowed to seed in 1874—seed gathered and planted in the spring of 1875, from which many healthy plants were obtained; but a less per cent. came up than of the Montevallo seed, attributable mainly to the difference in mode of covering. In 1874, the seed was dropped on land well pulverized, then packed with the foot, having a shoe on it. In 1875, becoming careless, the seed was dropped on well-prepared land, but *not packed or even covered*, yet *obtained many plants.—M. L. P. in Southern Cultivator.*

DISTRICT GRANGE—Choptank Grange, Patrons of Husbandry, representing Talbot, Caroline and Dorchester counties, held its regular meeting in Easton on Wednesday last. Nearly all the granges in the three counties were represented, there being about one hundred and fifty delegates present, of whom a considerable number were ladies. An election of officers resulted as follows: Master, E. L. F. Hardcastle; overseer, W. H. Smith; secretary, Jas. Wallace; steward, H. P. Hopkins; assistant stewart, R. M. Messick; chaplain, J. W. Knotts; Ceres, Mrs. Ella Dunning; Pomona, M. A. Noble; Flora, Lizzie Hopkins; G. K., J. T. Radcliffe.

young men, who ought to have been *producers*, and the *noblemen* of the land. But we must stop—our business now is to deal with the actual, every-day operations of the farm, rather than its *policy*.

COTTON PLANTING.

Late-planted cotton grows off better than early planted, but in localities where the seasons are short, it is important to plant early, to secure maturing of the crop. In such cases the plant may be pushed off by supplying it with easily assimilated food, immediately within reach, as by soaking seed in stable-manure water and rolling in plaster, or rolling in ammoniated fertilizers, or applying small quantities of these (say 50 lbs.) in the drill with the seed. The non-ammoniated dissolved bones or acid phosphates must not be used for this purpose, as they will injure the seed. Cotton should be planted very shallow—*one inch* is ample depth. But dry weather prevailing, it may not come up if the seed are so near the surface. The old-fashioned plan of opening furrow with scooter and covering with two furrows of the same, and then knocking off with a board just as the cotton is ready to come up, is the *surest*, but it is slow and tedious. A planter with wheel running in bottom of furrow, and pressing the earth in a narrow drill into which the seed fall, and covering with a board pressed down by a spring, or by a block, will, under ordinary circumstances, give a good stand. If the beds are rough and cloddy, it is best to precede the planter with a harrow, which has been several times described by us heretofore, and which we will briefly describe again, for the benefit of new subscribers. It is simply an ordinary triangular harrow, from 2½ to 3 feet in width behind, and with teeth set a little sloping backwards to prevent its fouling. The front tooth should be about 6 inches long in the clear, and the rearmost 10 inches, the intervening ones increasing gradually in length from front to rear. Such a harrow will *hug* a bed, clean it off, and still leave it elevated, and with a uniform rounded surface. We find it exceedingly useful in our own practice for smoothing and *freshening* the surface of beds. It is a great point gained in cotton culture to have the young plants in a straight narrow line, on a *smooth*, gently-rounded bed—the first working can then so easily be given it.

The Proper Application of Fertilizers.

At a meeting of the Massachusetts State Board of Agriculture, Dr. E. L. Sturtevant, after relating his experience in growing a crop of corn with artificial fertilizers, stated that he was so impressed with the influence of seed that he was sure, in his own mind, if all the seed had been of the first quality, the yield would have been from ten to fifteen, and, perhaps, twenty bushels more to the acre, and that it is desirable to get as many stalks upon an acre as your land and good culture will allow. On the question of the influence of cultivation, he said:

When we apply our fertilizer to the field, we know absolutely that that fertilizer is capable of raising a crop. The Professor [Stockbridge] has stated it here very strongly. I might add strength to his statement by referring to the experiments of Stohman, in Germany, who cultivated corn by water-culture. The corn was first germinated, and after the roots had obtained all the nutriment from the seed, they were transferred to water containing the ash of the corn plant, and double the amount of nitrogen that there was of phosphoric acid in the ash. The ammonia was applied in sufficient quantities to give three parts of solid substance to a thousand parts of water. These plants were grown to the height of seven feet, and ripened their crop, which shows conclusively, beyond argument, that these materials—the ash element of the crop, and nitrogen—are capable of yielding a crop; and it also brings out another point: that if the elements are brought in contact with the roots, the crop can be grown from those elements. There can be no question about that. Here the Professor's theory and my statements agree; but the great question in raising all our crops is, how to bring the elements of fertility into contact with the roots. There is the practical question which underlies chemical farming, and if the Professor had taken more time, and had given you more careful details of the culture which he proposes, I should have been glad. I think his system is capable of bringing fertility into Massachusetts, enabling us to raise corn profitably by the purchase of our manures. But how must we apply those chemicals? We know more about chemistry than we do about almost any other subject connected with agriculture. I will speak now of these agricultural chemicals in a soluble form. We know that when these chemicals become soluble in the soil, the soil exercises a decomposing action upon them; that they are separated into their component parts, and while a portion escapes through drainage, another portion remains fixed in the soil; and we can say with regard to the phosphoric acid fixed in the soil, that there is no escape through leaching. It remains absolutely fixed. The potash is more diffusible, and some of it does leach through the soil, but only to a very small extent. The nitrogen, in the form of nitric acid, escapes very rapidly; in the form of ammonia, it is fixed to a large extent. I also know, from the record of certain experiments with turnips, and also from my own observation of the influence of chemicals upon corn roots, that the presence of certain chemicals develops the fibrous matter of the roots.

Let me quote an experiment where plants grew in cylinders filled with very poor clay earth, in which the chemicals were placed in a symmetrical manner in the soil,—one cylinder had the fertilizers in the centre, another had them arranged around the circumference, etc. It was found that the roots extended without many fibrous branches until they reached the fertilizers, and then they distributed themselves with their innumerable mouths to take up these fertilizers. Now, in growing the corn-crop this year, we placed all our fertilizers upon the surface of the land. What was the result? The result was that we had a greater root-growth near the surface than at lower depths. The moisture of the season probably saved us from a total loss, because, when the short drought came

fall, our corn wilted so that the ears hung n. Now, if those roots had received that riment in a lower portion of the soil, they uld have been out of the reach of the drought. w, then, can we apply these chemicals, in er to get the best effect from them? Evi- tly, reason answers: "Study the nature of elements, and apply them rationally."— sphoric acid is very little diffusible in the . If you apply it to the surface-soil, and pour er upon it, it will pass down only a very short ance before it becomes fixed, and the roots re to approach the surface to come in contact h it. To apply phosphoric acid rightly, it uld be put in deep,—ploughed in three, four, or six inches deep. The potash, being more ffusible, might be spread nearer the surface. nitrogen, in whatever form you apply it, be- rather diffusible, should be applied upon the face. In that way, we have taken the best ecautions for giving our crop its food during period of growth.

Now, having planted our corn upon a chemi- lly fertilized field, the only question with the op is to have these chemicals in contact with e roots during the whole period of growth. ere can be no question, if there is enough rtility in the land, if that fertility is in a solu- e form, and if the roots come properly in con- ct with that fertility, that the result will be a od crop. But what is the fact about roots? e roots occupy but a comparatively small on of soil. They feed from the extremities. ey pick up their nutriment through the root- s which are upon the small fibrous roots. ants differ in the depth to which their roots netrate. You can dig down into the soil ere corn is growing, and you will be able to ce the corn-root down as far as you can ordi- arily go. In one experiment as to the depth of ots, I found, upon land which had not been anured for fifteen years certainly, and proba- y for a longer period, and which yielded about e-third of a ton of hay to the acre, the grass- ots extended down twenty-five inches. These fferent roots extend to different depths, and ey have different habits of growth, and the ture of the soil stimulates the growth of these ots to a different extent, according to the dif- rent kinds of plants. But confining myself the corn-plant, I will state that the corn-roots tend laterally as well as downward; that they ver the whole space upon which they grow ith immense rapidity. It is hardly conceivable w fast the roots of the corn-plant are formed; it they extend out laterally. Starting from the ant, they put out a few fibres throughout their ngth, and in a short time the tough coating of the roots is incapable of taking up any food, d the extremities of the roots, through their tension, seek their food from a distance. Now, there were any way whereby we could bring ese fibrous roots back again, and make them cupy the whole of the soil; keep them from rking off in random directions, and make em fill the soil more completely, so that a large rtion of the soil will be filled, then we can ex- ct the utmost amount of the fertilizing power tained in that soil which the plant is capable appropriating. This, I think, can be done.

Pomologists have known for a long time that root-pruning increases the yield of apple-trees, and increases the area covered by the roots. I have here the roots of two apple-trees,—one root pruned this last spring, the other not pruned. In my left hand I hold a root showing the effect of root-pruning; in my right hand, a root which shows the natural growth. When you cut off the root of a tree, immediately from the cut surface are put off small fibrous roots, and when you remember that it is only the small, young roots which take nutriment, you can see how immensely you add to the power of the plant to take nutriment from the soil by pruning, and thus increasing the number of the fibrous roots. You take a corn-plant and divide the root, and what happens? In less than twelve hours you will find that that root has commenced to throw out small roots which are almost innumerable. These roots seek out the nutriment in the land, and grow rapidly. The growth of the leaf of the corn-plant is stated to be about five inches in twenty-four hours, and it is probable that for each inch of the growth of the leaf there is a growth of several inches of these small fibrous feeding roots, which occupy so many of the interspaces of the soil, and take so much nutriment from it. Now, if we can change the roots nearest the plant from those coarse roots into innumerable small roots, we are giving that plant greater command over the fertility of the soil near the plant. In other words, we carry the roots to the chemicals, as well as carry the chemicals to the roots. Then, in a short time, if we cut the roots at a further distance from the plant, other fibrous roots are caused to develop, and these send out fresh fibres, and the plant has still greater control over the fertility in the soil.

Now, there is another point here, which is a physiological law. You can put a plant upon an extremely fertile field,—a field too fertile for it,—and the result is that the powers of the plant are expended in the growth of leaf, not in the development of fruit. You all know that. Now, if you can induce a check to that plant, without injuring the vitality of the plant, you have changed the forces which are being expended in too luxuriant growth of leaf, into forces of fruitfulness. Therefore, by this check which you get in root-pruning without destroying the vitality of the plant, you are changing the forces of the plant itself to the production of fruit instead of the production of leaf. The result is, that root-pruning will tend to increase the number of ears to the stalk of the corn; and, in fact, we all know in practice, that the better farmers cultivate their corn the most, and those farmers who cultivate their corn the most usually get better results,—that the results are larger in proportion to the cultivation. I don't know the largest number of bushels of corn that have been produced to the acre, but we have a record of one field in Ohio which is reported to have given two hundred and sixty-three bushels of shelled corn per acre, and another field in South Carolina is reported to have yielded two hundred bushels of shelled corn to the acre. Now, if by means of a preparatory study of the fertilizers to be used, the proper distance of planting, and the proper culture, we can give the corn-plant an increased advantage over the soil as it exists, we have increased our crop, and increased it very largely indeed.

Another thing. By checking the luxuriance of the leaf, you can plant your corn nearer together, and can get better results, because you get more stalks and more ears on the same area of land; at the same time you increase the tendency of the plant to bear more ears to the stalk. This idea, which I call a new theory in agriculture, because it thus far appears to have been overlooked, has been developed, I think, through the study of the corn-plant growing this year; and if chemical fertilizers are to be used with advantage, this theory is a very important one to be considered; for it enables the farmer to take advantage of the capital which he applies, in the form of fertilizers to his land, and to get from it its most advantageous results before it has time to be wasted from the land. But in applying chemical fertilizers to the corn-crop, we must be very careful to understand the conditions, as I said before, under which we apply them. The chemical fertilizer, rationally applied, I have no doubt will bring the desired results to whoever uses it; but there is no quicker way for a farmer to lose money than to buy chemical fertilizers and apply them without understanding the application. I am tempted to give an illustration as proving this point, and it may be of interest in itself. I will answer for the truth of it, although I do not care to give names. A gentleman, who is a manufacturer, but who is interested in farming, has quite a large farm, and cares more for results than he does for the expense of getting them. He has, among the waste product of his mill, the refuse of the burring-machine, which takes the burrs from the wool. It is almost clear wool-fibre. An analysis of that shows that it contains some fifteen per cent. of nitrogen, some two per cent. of potash, and but very little, if any, phosphoric acid. This wool-waste, one inch in depth, was placed under the soil seven inches deep. He had a man go along and push this wool-waste under the furrow as it was turned over. He planted grass-seed, and this year he harvested from that field twenty-five tons of hay from five acres. I saw the hay myself, and it was a noble sight for a farmer to look on. He was so successful in this experiment that he thought he would apply this manure to other crops and see how it would act. [redacted]

He ploughed up quite a large field, and, except on a strip perhaps four rods wide and twenty rods long, he put this wool-waste, until the soil was quite heavy with it. He sowed upon that field the ordinary flat turnip. I saw this field during the last days of October, and on that part where the wool-waste had not been applied, the leaves were of a very dark green, very short, indeed, and the plants looked sickly. But beyond this was a field of turnip-tops, which came up four inches above my knee, so thick you could not see the land, and the leaves of a bright turnip green. As I was walking to the fields, and as the gentleman explained what he was doing, I said: "You will get no crop commensurate with the manure you have applied, but you will get leaf." The result was as I stated. Where there was no manure, there was a fair crop of roots, and very little leaf; but on that part of the field where the wool-waste had been applied, the plants had gone almost entirely to leaf, rather than root. The lesson to be derived from this is, that these chemical fertilizers, applied wrongly, can bring no profit. As applied to grass, the wool-waste had produced a profit, but as applied to turnips, it had produced no profit; in fact, it had resulted in loss, because the turnips were not so good for it.

HEN MANURE COMPOST.—A correspondent of the *New England Farmer* says: "I have three barrels of compost, composed of a layer of beef bones and meat, and a layer of wood ashes throughout each barrel, the whole well saturated with chamber-lye, and I have also five barrels of hen manure and one of air-slacked lime. How shall I prepare each for use this spring, and where can it be used to the best advantage—upon corn, potatoes, millet, mowing fields or newly seeded land?"

To which the editor replies: "The hen manure we would spread broadcast on corn land, and cultivate it into the soil. If for potatoes it may also be spread, or it may be strewn lightly in the drills, either before or after dropping the potatoes. We would not keep it for millet, as it would probably waste by fermentation before it would be time to sow that crop. Nor would we spread it on old mowing fields as a top dressing, unless composted with a large proportion of muck or loam. If the ashes soften the bones so that they can be pulverized, the whole mass may then be spread broadcast on any cultivated field, and worked into the soil. We have never had very good success dissolving bones with ashes. Are inclined to believe that bones can be worked up more economically by those who make it a business, than by the farmer."

Cheaper Production is Higher Price.

If a bushel of wheat or a pair of shoes can be produced by one day's labor, says the *American Agriculturist*, and sold for a dollar, the dollar is the value of the day's labor. If we can, by improved methods of working, or greater skill or activity, produce two bushels of wheat, or two pairs of shoes, by a day's labor, and still sell them for a dollar each, the value of the labor is two dollars. We have then doubled the value of our labor, without increasing the cost of it; consequently if the cost of living remains the same, our profit is doubled. The shoemaker, and many other mechanics, have succeeded by the exercise of increased skill in their work, in thus doubling their product, without a corresponding decrease in the price of their goods. The farmer has not succeeded in doing so much as this, although by the use of drills, harvesters, and thrashing machines, it costs him less labor to produce a bushel of wheat, than formerly. But the most laborious part of his work is not cheapened, nor is there any probability that it soon will be. Plowing and harrowing can not cost less for some years to come, than they now do. But work may be made to cost less, practically, if we can make it more effective. If we plow an acre of barren soil, we lose our labor altogether, and the cost is exactly equal to the value of the labor expended, because there is no return. If we plow an acre of ground which produces a crop worth exactly the cost of the labor, the labor is paid for, but there is no profit. If the

ground is rich enough to produce a crop double the value of the labor expended, the profit is equal to 100 per cent. upon the expenditure. The way to better profits very clearly lies in the direction of enriching the soil. This is the whole secret. What we then produce will cost but half what it formerly did, and we therefore get a double price for our crop, which merely represents so much labor. There is no fear that this method will be worked out, nor danger that the yield of grain will be doubled in a very short time. There is every certainty that those few farmers who will succeed in making their farms produce double the former crops, will not be forced to receive a less price for what they have to sell. They have every opportunity then to double their income in the course of a few years, if they will only take the right method. How can this be done? It cannot be done without working for it with brains as well as with the hands, and becoming more skillful and painstaking in the use of what means may be made available, and exercising some patience, for it cannot be done at once.

Stated Displays at the Centennial.

The following stated displays, under their respective dates, will be held during the International Exhibition. Applications for entry may be now made, on forms which will be supplied by the Chief of Agricultural Bureau, Mr. Burnett Landreth:

Agricultural Products.—Pomological products and vegetables, May 16 to 24; strawberries, June 7 to 15; early grass butter and cheese, June 13 to 17; early Summer vegetables, June 20 to 24; honey, June 20 to 24; raspberries and blackberries, July 3 to 8; Southern pomological products, July 18 to 22; melons, August 22 to 26; peaches, Sept. 4 to 9; Northern pomological products, Sept. 11 to 16; Autumn vegetables, Sept. 19 to 23; cereals, Sept. 25 to 30; potatoes and feeding roots, Oct. 2 to 7; Autumn butter and cheese, Oct. 17 to 21; nuts, Oct. 23 to Nov. 1; Autumn honey and wax, Oct. 23 to Nov. 1.

Field Trials.—Mowing machines, tedders, and hay rakes, June 15 to 30; reaping machines, July 5 to 15.

Live Stock.—Horses, Sept. 1 to 14; dogs, Sept. 1 to Sept. 8; neat cattle, Sept. 21 to Oct. 4; sheep, Oct. 10 to 18; poultry, Oct. 27 to Nov. 6.

The above dates may be favorable for the assembling in Philadelphia of societies and associations interested in the specialties above enumerated.

Trial of Plows and Harvesters, etc.

A grand field trial of harvesting machines and farm implements is to take place on the farm of the Indiana Agricultural College, near Lafayette, commencing June 26th next, under the direction of the Indiana State Board of Agriculture. A grand gold medal, $100, will be awarded for the best combined reaper and mower; a gold medal, $50, for the best single mower; and a gold medal of $50 for the best single reaper, will also be awarded. An entry fee of $20 will be charged on all machines competing for the grand gold medal, and $10 on all single mowers and reapers.

A plowing match will commence June 27th, the plows to be tested by actual trial, with a dynamometer. The Board will find ground. Entry fees for competitors for a gold medal, $10; for a silver medal, $3. Premiums of gold medals will be given for best plow for general purposes, and for the best two-horse cultivator. Silver medals and diplomas will also be given for plows of various kinds, and for various purposes. Also for various implements for planting and cultivating crops. Information in regard to rules and regulations may be had by applying to Alex. Heron, Secretary, Indianapolis, Indiana.

Portable Fence.

A correspondent of the *Western Rural* gives the following plan for making a portable fence:

I took four six-inch boards, twelve feet long, and three inches wide, an inch thick, four and one-half feet long; nailed the panels together with ten-penny nails. Soften them so as to clinch them. Put the end pieces a foot from the end, took staves five and one-half feet long, sharpened them so as to drive them in the ground. In the upper end of the stake I put a staple made from quarter-inch iron; the staple is seven inches in the clear, and goes through the stake and clinches and leaves a little over twenty inches between the staple and stake.

Then I set the stakes. All I have to do is to slip the top boards of the panel through the staples; then drive on top of stake so as to force slats of the panels into the ground a little; then the whole cannot move them, and it is a fence without a nail or pin. One great advantage in this kind of fence is that you can take out any panel in the fence without disturbing the rest. Two men with a team can take up and set out eighty rods in a day quite easily.

Treatment of Grapes.

Henry Wood, of Westchester county, N. Y., has furnished an account of an interesting experiment in grape culture, showing the importance of a dry bottom for the roots. He had a small vineyard for a family supply, placed on the slope of a hill. The trellis extended in a horizontal direction, and the ridges formed in cultivation, as a consequence, prevented the free escape down the hill of the water from rains. The fruit, which was chiefly of the Concord, Hartford and Iona, was poor, imperfectly developed, badly ripened, and more or less mildewed. After some years the trellis was altered so as to extend directly down the slope. The furrows, in cultivation, facilitated the escape of the water from the soil, and the fruit then became well grown, plump and excellent. Timothy grass was afterwards sown in the vineyard to facilitate the evaporation of the water of the surface as well as its escape down the slope, the soil being very rich. The fruit of the Concord and Hartford maintained its excellent character, the natural vigor of these vines and the fertility of the soil keeping up sufficient growth. The Iona failed.

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SAML. SANDS, WM. B. SANDS, } Editors and Proprietors.

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Transient Advertisements payable in advance—all others quarterly.
Advertisements should reach us by the 20th of the month, to secure insertion in the succeeding issue.

MAY 1, 1876.

Subscription Bills.

Many of our friends have responded to the little reminders sent out in the April *Farmer*, and they have our thanks. We hope all who have not yet done so will favor us, as soon they conveniently can, by their remittances.

There are some instances where persons who originally subscribed in clubs seem to think their single subscriptions should be received at the reduced price. To such we would say that the condition in the latter case is that there should not be less than *five* in the club, and that they should pay in advance, or at least by the end of March. This saves much labor in the way of making out bills, keeping accounts, &c.

Agriculture of Massachusetts.

By the courtesy of the Hon. Chas. L. Flint we have his Report as Secretary of the Massachusetts State Board of Agriculture for 1875-6. It is a volume quite up to the standard of former years and embraces a great amount of valuable matter, discussions at sessions of the Board, reports on fertilizers, papers read and addresses delivered, &c. We have already drawn upon its contents and shall probably have occasion to do so again.

GERMAN MILLET.—It will be of interest to various inquirers to know that Messrs. Cromwell & Congdon, No. 51 Light street, Baltimore, have a supply of this seed, which they are offering at $3 per bushel.

North Carolina Lands.

The advertisement to be found elsewhere in this issue of lands in North Carolina deserves attention, not only from capitalists but from parties desirous of emigrating to a fine agricultural section. The country in which they are located offers many advantages of soil, climate and situation. The opportunity of colonies securing lands together is one that should not be overlooked.

Wood's Reaper.

Messrs. Thos. Norris & Son call attention to the new "Sweep-Rake" pattern of Wood's machine, which has not heretofore been offered to any extent in the home markets. John Hamilton, Esq., whose letter in commendation both of this reaper and the Malta Wheel Cultivator is given, is one of the most respected and reliable farmers in Southern Maryland, and in whose testimonial the utmost confidence can be placed.

Fruit Destroyed.

Our friend, Mr. G. F. B. Leighton, writes the *Norfolk (Va) Landmark*, under date of 20th April, that his Duchess and other early-blooming varieties of pears have been destroyed by frosts. Bartletts have nearly escaped, but not without a struggle, as on the 7th the temperature was 20°, and the blossoms were covered with frozen fog. Apples have escaped and promise well.

The Agricultural College

We noticed in our last that the Legislature had refused any appropriation looking to the acquisition by the State of the private interest in this institution. An effort to give the representatives of the State a greater influence in the management also failed. Its reputation for past inefficiency seemed to have decided the Legislature to wash its hands of its further maintenance at the cost of the State.

After our last number was issued, we received the Journal of the House, from which we find that the proposed appropriation to the college for 1877 was defeated by a vote of 51 to 11. Voting solidly against the appropriation was the entire Committee on Agriculture, save one member, Mr. Gwynne, of Pr. George's; and, of the Committee on Education voting, there were four opposed to two who favored the appropriation. As it was within the province of these two committees to examine the condition and workings of the College, this result is significant as showing their judgment of its usefulness.

The annual meeting of the stockholders was held on the 12th ultimo, with a smaller attendance even than usual, and representing only some 4,200 shares—a minority—of the stock. The formality of re-electing the old Board of Trustees was gone through with.

Sale of Jerseys and Southdowns.

Col. J. Stricker Jenkins sold on the 20th ult., through Messrs. A. M. Harkness & Co., Philadelphia, his Jersey herd and Southdown flock.

Mr. T. L. Hume, of Washington, D. C., bought the following named cows and heifers at the prices affixed: Imported Bisma, $305; Imported Bisma 2d, $300; Imported Dagmar, $180; Zelda, $100; Fauvette 2d, $110. Col. E. H. Webster, Harford Co., Md., bought Minnie at $105. T. H. Shallenberger, Pottsville, Pa., got Thyra, $205; and Fauvette, $400. A. W. Fuller, Catasaugua, Pa., Thyra 2d, $80. J. D. Wing, New York, Niobe 6th, $300; J. M. Walton, West Philadelphia, Thyra 3d, $105; H. Ley, Allentown, Pa., Bisma 4th, $130. Mr. Hume, Princeton, N. J., bought the bull Jeweler for $110; J. F. Dell, Woodbury, N. J., bull Glendon, $92; J. Patterson, Chester Co., Pa., Bisma's bull calf, $55.

The Southdowns brought from $10 to $34 a head.

Kentucky Blue Grass.

On this subject the *Kentucky Live-Stock Record* has the following:

Kentucky Blue grass or Poa Pratensis receives its name from its bluish tint when full grown; it has often been claimed as the same species as the Northern June grass, or the Pennsylvania green grass. From its form and color this claim doubtless originated, but on investigation we find it a different and much superior variety. It is indigenous to all limestone land, and flourishes best where there is a clay base. The South Branch of the Potomac and the Greenbriar section of Virginia, perhaps, surpass any other localities outside of Central Kentucky in adaptability for its propagation. We have heard Capt. Isaac Cunningham, who, perhaps, utilized it as early as any Kentucky stock breeder, and whose close observation made him fine authority, say "wherever the short-jointed pipe-stem cane was to be found flourishing, there was soil best adapted to blue grass." Our own observation since has verified this assertion in reference to Kentucky. It grows well in a rather dry soil, but will grow in a variety of soils, from a wet meadow to the dryest of knolls. It is difficult to give it "a good set" in light, porous or sandy land, and it does not stand a severe drouth like some other grasses. If the summer is very dry, it appears to dry up utterly, and will burn if set on fire, yet even in its dry state it is very nutritious to all kinds of grazing stock, especially to sheep and cattle, but perhaps its greatest value is its power to endure the frosts of winter better than any other grass, and even in summer when it appears crisp and lifeless, it is "not dead, but sleepeth," and the first gentle patter of the rain animates it and sets it to growing. Among the characteristics that specially commend it to favor, are first: Its capacity to yield an abundant pasturage the year round, and may almost be called an evergreen, thus giving it advantages for winter grazing. Again, its fattening qualities are certainly equal, if not superior, to those of any other grass, giving rise to the most savory of meats. Cattle keep in good beef order on it during the winter. Especially in milch cows does its excellence manifest itself, producing a rich flow of sweet and oily cream, from which the choicest butter is made. It has fine capacity for holding the soil from washing away; with its thousands of thready rootlets, it clasps every atom of soil, and when it has thus taken possession, it admits of no rival, forming a heavy, rich, dark green sward, having at a little distance a somewhat bluish cast. An old "blue grass" farmer of this vicinity says: "Whoever has limestone land has blue grass; whoever has blue grass has the basis of all agricultural prosperity; and that man, if he has not the finest cattle, horses and sheep, has no one to blame but himself. He can hardly avoid doing well if he will try." It may be sown any time during the winter when the snow is on the ground, or, further South during some of the numerous rainy spells of their milder winters. Sow broadcast from three pecks to a bushel of the seed to the acre. In a loose soil, it is best to prepare it by feeding stock upon it and tramping the ground well; but in Kentucky lands, when it is desired to get it well set for a permanent pasture, no stock should be allowed to graze it for the first year, nor until the grass seeds in June of the second year, taking care never to feed the grass too closely at any time.

The Usefulness of Alabama Guinea or Johnson Grass Seed.

I have some information bearing upon the capability of the Alabama Guinea or Johnson grass to produce fruitful seed. In January, 1874, I obtained a bushel of the seed in Montevallo, Alabama—latitude 33—planted some on four acres of land, in latitude 32, prepared in all respects same as for cotton, and obtained quite a satisfactory stand. A portion was allowed to seed in 1874—seed gathered and planted in the spring of 1875, from which many healthy plants were obtained; but a less per cent. came up than of the Montevallo seed, attributable mainly to the difference in mode of covering. In 1874, the seed was dropped on land well pulverized, then packed with the foot, having a shoe on it. In 1875, becoming careless, the seed was dropped on well-prepared land, but *not packed or even covered*, yet *obtained many plants.—M. L. P. in Southern Cultivator.*

DISTRICT GRANGE—Choptank Grange, Patrons of Husbandry, representing Talbot, Caroline and Dorchester counties, held its regular meeting in Easton on Wednesday last. Nearly all the granges in the three counties were represented, there being about one hundred and fifty delegates present, of whom a considerable number were ladies. An election of officers resulted as follows: Master, E. L. F. Hardcastle; overseer, W. H. Smith; secretary, Jas. Wallace; steward, H. P. Hopkins; assistant stewart, R. M. Messick; chaplain, J. W. Knotts; Ceres, Mrs. Ella Dunning; Pomona, M. A. Noble; Flora, Lizzie Hopkins; G. K., J. T. Radcliffe.

Baltimore Markets—April 29.

The quotations below are Wholesale Prices.

Breadstuffs.—*Flour*—Dull, and prices rather depressed. We quote: Howard St. Super, $4.00@4.50; do. Extra, $5.00@5.50; do. Family, $6.00@7.50; Western Super, $3.50@4.50; do. Extra, $4.75@5.50; City Mills Super, $3.75@4.00; do. standard Extra, $4.50@5.00; do. medium Extra, $6.00@6.50; do. Rio brands Extra, 7.75@$8.00; Fancy brands, $9 00; Fine Flour, $3.00@3.37; Rye Flour, $4.75@5.00; Corn Meal, City, $3.25; Western, $3.50.

Wheat.—Dull and heavy, tending downwards. We quote: Southern red, common to fair, $1.25@1.35; do. good to prime, $1.40@1.50; do. amber, $1.55; do. white, $1.40@1.50; Pennsylvania red, $1.52@1.53; Western No. 2 winter red, $1.45@1.47.

Corn.—Southern yellow dull and lower; white in demand, and firm; Western active. We quote: Southern white, 55@62 cents; do. yellow, 62@62½ cents; Western mixed, 63 cents.

Rye.—Firm, with sales of good to prime at 85@87 cents.

Oats.—Dull and heavy. Western mixed, 40@44 cents; do. light, 46@48 cents; Southern, good to prime, 46@50 cents.

Cotton.—Dull and depressed, with quotations as follows: Middling, 12⅜@12½ cents; low middling, 11⅞@11¾ cents; strict good ordinary, 10⅞@11 cents; good ordinary, 10@10¼ cents.

Hay and Straw.—Fair demand, and prices steady. Cecil Co. (Md.) Timothy, $25@26; Penn. and New York, $21@24; mixed, $19@22; Clover, $20; Wheat Straw, $12; Oat do., $13; Rye do., $20.

Live Stock.—*Beef Cattle*—Generally dull. We quote: Best on sale, $5.00@6.00; generally rated first-class, $4.50@5.00; medium or good fair quality, $4.00@$4.50; ordinary thin Steers, Oxen and Cows, $3.75@4.00.

Hogs.—Market over-supplied, and dull. Sales running from 9¼ to 11 cents.

Sheep.—Demand light, with most sales at 4@5¼ cents, with some extras at 6 cents. Lambs in demand, at $3.00@5.50 for fair to good fat ones.

Mill Feed.—City Mills Brownstuff, $18; Middlings, $22. No Western offering.

Provisions.—Dull and heavy. Bulk Shoulders, 9@9¼ cents; clear-rib Sides, 12½ cents. Bacon—Shoulders, 9¾@10 cents; clear-rib Sides, 13 cents. Hams, 16@16¼ cents. Lard, 14½@15 cents. Mess Pork, $22.75. *Butter*—N. Y. tubs, choice, 35 cents; good to prime, 30@32 cents; Western, selected to choice, 31@36 cents; roll, fair to prime, 23@32 cents. *Eggs*—16@17 cents, and in fair demand. *Cheese*—N. Y., good to choice, 12@14 cents; Western, 12@12½ cents.

Salt.—Liverpool Ground Alum, $1.15@1.25; Fine, $2.80@2.90 ₩ sack; Turk's Island, 30@35 cts. ₩ bushel.

Tobacco.—Receipts light and market quiet, though good grades of Maryland are in fair request at steady prices. We quote: Maryland frosted, $3.00@4.00; do. common to good sound, $4.50@5.50; do. middling to fine, $8.00@11.00; do. fancy, $12.00@15.00; do. upper country, $6.00@25.00; do. ground leaves, $3.00@9.00. Virginia—common to good lugs, $6.50@8.50; common to medium leaf, $9.00@11.00; fair to good do., $12.00@14.00; selections, $15.00@20.00.

NEW ADVERTISEMENTS.

CONTENTS OF MAY No.

THE FREDERICK CO. (MD.) AGRICULTURAL SOCIETY will hold its annual Fair October 10th, 13th, and a committee has been appointed to prepare the premium list.

THE SOMERSET COUNTY AGRICULTURAL ASSOCIATION has elected the following officers: President, Levin L. Waters; vice-president, Thomas Sudler; treasurer, Wm. T. Fleming; secretary, Wm. H. Brown.